

MODERN GREENHOUSE CONSTRUCTION.



HITCHINGS & CO.,

ESTABLISHED 1844.

233 MERCER STREET,
NEW YORK.

HEATING AND VENTILATING CATALOGUES SENT ON APPLICATION.

#6275
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HITCHINGS & CO.,

(ESTABLISHED 1844.)

HORTICULTURAL ARCHITECTS and BUILDERS.

COMMERCIAL ROSE AND GREEN HOUSES

ALSO

CONSERVATORIES, PALM HOUSES, VINERIES, ETC.

STRUCTURAL IRON WORK FOR HORTICULTURAL BUILDINGS.

IRON BENCH FRAMES FOR SLATE OR TILE TOPS.

EDWARD W. HITCHINGS, PRESIDENT
CHARLES ARMITAGE, TREASURER.
THOMAS W. KING, SECRETARY.

HITCHINGS & CO.,

No. 233 MERCER STREET, NEW YORK.

FOUNDRIES AND CONSTRUCTION SHOPS

Occupy block bounded by Garfield and Randolph Avenues, Union Street and C. R. R. of N. J., Jersey City.

GREENHOUSE HEATING AND VENTILATING CATALOGUE ON APPLICATION.

ESTIMATES OF COST, SKETCHES AND INFORMATION FURNISHED.

In writing for estimates state the probable dimensions of the structure or structures to be erected, the location of same, and general grade of the land, also the purposes for which they are intended, whether for Conservatory, Palm, Rose or General Green House, and whether for Commercial or Private use. If Graperies, state whether for early or late crops.

On receipt of above information, we will be pleased to furnish estimates of cost for the structure complete, ready for planting, or for the Structural Iron Work, Heating and Ventilating Apparatus, shipped ready for erection, with plans, details and full instructions to enable the local mechanics to erect same.

THE increasing demand for flowers and foliage plants of a higher grade than have been produced in the past, creates the necessity for a corresponding change and improvement in the construction and durability of the glass structures devoted to their production.

It is not many years since that the first consideration in the building of such structures was the cost ; and the durability, lightness and adaptability to the purpose in view were secondary matters. The average greenhouse was constructed with heavy wooden rafters and purlins, and with sash bars only eight or ten inches apart, thus greatly obstructing the direct rays of the sun, which are so vitally necessary to the perfect development of plants and bloom in general. But improvements have been made from time to time, until to-day we are using iron rafters one-half by three inches, with steel angle purlins, and narrow wooden glazing bars, spaced for glass sixteen inches wide, thus allowing an almost unobstructed passage of the sun's rays ; posts, columns, gutters and sills are also of iron, thus adding greatly to the durability and strength of the structure.

The cuts on the following pages show clearly the construction and arrangement of our Standard Iron Frame Houses, and are well worthy of the closest consideration by all interested in Greenhouse or Conservatory building.

On page 6 is shown a section of a three-quarter span house. This class of house is intended more especially for roses, and is built with the long sloping roof facing the south, in order to secure the best results from the average winter sun ; this house is shown with wood sides (so constructed with a view of economy in first cost) and is such as is used universally by the commercial grower.

On page 7 we show a three-quarter span commercial rose house, as described above, with the addition of a lean-to propagating house on the north side ; this small house also serves well for a fern house or a cool orchid house.

The cut on page 8 is similar to that on page 6, but with brick foundations, and is better adapted for private estates.

On page 9 we show a section of an even-span house, with wood sides, which is usually built with its length extending north and south. This style of house is well adapted for general greenhouse purposes, and its benches are all easily reached from the ground level.

On page 10 we show the arrangement of an even-span house known to the trade as " Ridge and Furrow." The object of this arrangement is to economize space, cost of construction and working expenses. Such houses are placed with their length running north and south, and in this position, in consequence of the exceeding light construction of the roof, receive full benefit of the sun's rays. A great objection to such an arrangement has been heretofore the fact that snow would accumulate in the furrow between the roofs, and cause damage to the houses ; this objection is, however, entirely overcome by the use of our NON-FREEZABLE CAST-IRON GUTTERS, by which sufficient warmth is radiated to melt such snow as may fall in them. These gutters are 9 inches wide, and a workman can easily walk through them to make any desired repairs to the roof.

The cut on page 11 shows a similar house to that on page 10, but with brick foundations. The cement tank shown in this cut is a very desirable feature in a greenhouse, providing a storage for water at nearly the same temperature as that of the house, which is an absolute necessity for the successful growth of most greenhouse plants.

On page 12 is shown a section of an even-span greenhouse, with the addition of a straight lantern, which adds materially to the outward appearance. The Cold Frame or Hot Bed shown on the side of this house is a valuable addition, being eminently suited for the growth of violets, vegetables, lettuce, etc., and is also very useful for the hardening of bedding plants in early spring.

The cut on page 13 shows a section of a Curvilinear Palm House, with curvilinear lantern. Such houses are made of all heights, from 18 to 75 feet. Houses of this description require such a large number of heating pipes to produce the desired warmth, that, in order to more evenly distribute the heating surface, it is advisable to place a portion of them in trenches below the walk, and cover them by strong, neat, cast-iron gratings. These gratings have two good points—firstly, they allow a free circulation of the warm air; and, secondly, they always afford a clean, dry walk.

The cut on page 14 is similar to that on page 9, but with brick foundation walls.

The cut on page 15 shows an even-span curvilinear house on brick foundations.

The cut on page 16 shows a three-quarter span curvilinear house on brick foundations.

On page 17 we show a section of a lean-to Grapery or Fruit House. The front or south wall of such a house may be built on piers, spanned by iron I beams, which allow the roots to spread outside. We also build Graperies and Fruit Houses of even-span construction, about 25 feet in width, so that vines or trees may be planted on both sides of house.

On page 18 is a section of a three-quarter span commercial sash bar house.

On page 19 is a section of an even-span commercial sash bar house.

The upper cut on page 20 shows a very useful house for private estates, being of the Standard Iron Frame construction, on brick foundations. The width of such a house is usually about 10 feet, giving ample bench room on each side, with a central pathway. This house is well suited for lettuce, cucumbers and vegetables, also for bedding stock and violets.

The lower cut shows a similar house with wood sides and no gutters, of portable construction with iron frame attached to wood sills.

On page 21 are shown details of our improved Iron Bench Frames, as arranged for drainage tile, or other bottoms. Benches constructed in this manner are practically indestructible, and are of an unexceptionably neat appearance. They may be easily arranged for any style of new or old houses, and readily set up by any ordinary mechanic.

On page 22 we show a longitudinal section of our Standard Iron Roof Frame between rafters, showing the relationship between rafters, purlins, glazing bars and glass; also a cut of our cast-iron floor grating, as used over trenches in which heating pipes pass under walks, or as used for walks in graperies, etc. This pattern is sufficiently open to allow of a free circulation of air, and of ample strength to sustain any weight which would be brought to bear upon it. It is cast of any width to order, with such flanges on its edges as are requisite for its support. We also show on this page our standard pattern of greenhouse cresting. This cresting is made of several heights, from 5 inches up, with suitable finials. We also make other special patterns for large palm houses, etc.

On page 23 we show iron columns as used for support of either the rafters, purlins or ridge of the greenhouse. We make a varied assortment of fixed and swivel caps suitable for any style of roof construction. For the base of rafter or purlin columns we show our improved anchor base. These bases are so arranged that they can be buried or anchored in the ground to prevent sudden wind storms from raising the roof, and also so that the columns may be easily screwed in or out of the cap in order to line up the roof at pleasure.

In commercial greenhouses we show the cast iron post bases (set two and one-half feet below the surface of the ground to avoid displacement by frost, and about six inches above) to which are securely bolted the one-half inch flat iron combined post and rafters, bent at the eaves line to the pitch of the roof. By this means we prevent the rapid corrosion which takes place when wrought iron is brought in contact with the earth.

The rafters are connected to each other at the ridge by means of tie rods and cast iron brackets which also carry the ridge.

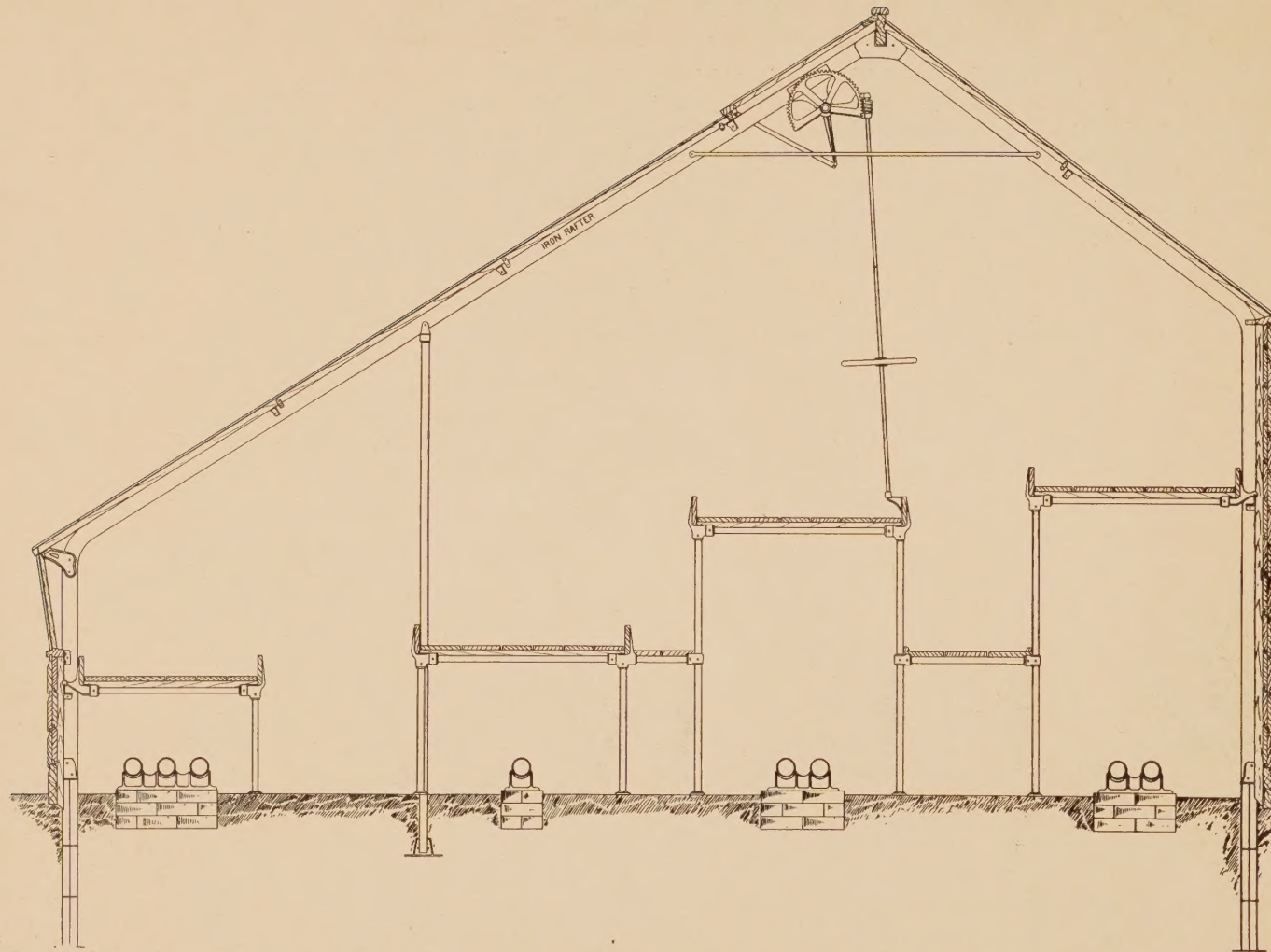
The purlins are of steel angles of special proportions giving maximum strength and minimum shade. They are fastened to the rafters by malleable knees to which they are securely bolted. They also support the wood glazing bars which are held in place by wood screws.

The gutters are of cast iron and so fastened together and connected with the posts as to allow amply for the expansion and contraction due to the variations of temperature, and are so arranged that a sufficient portion of their surface is exposed to the inner warmth of the house to prevent their becoming clogged with frozen water or snow. This is a feature that cannot be claimed for any other gutter.

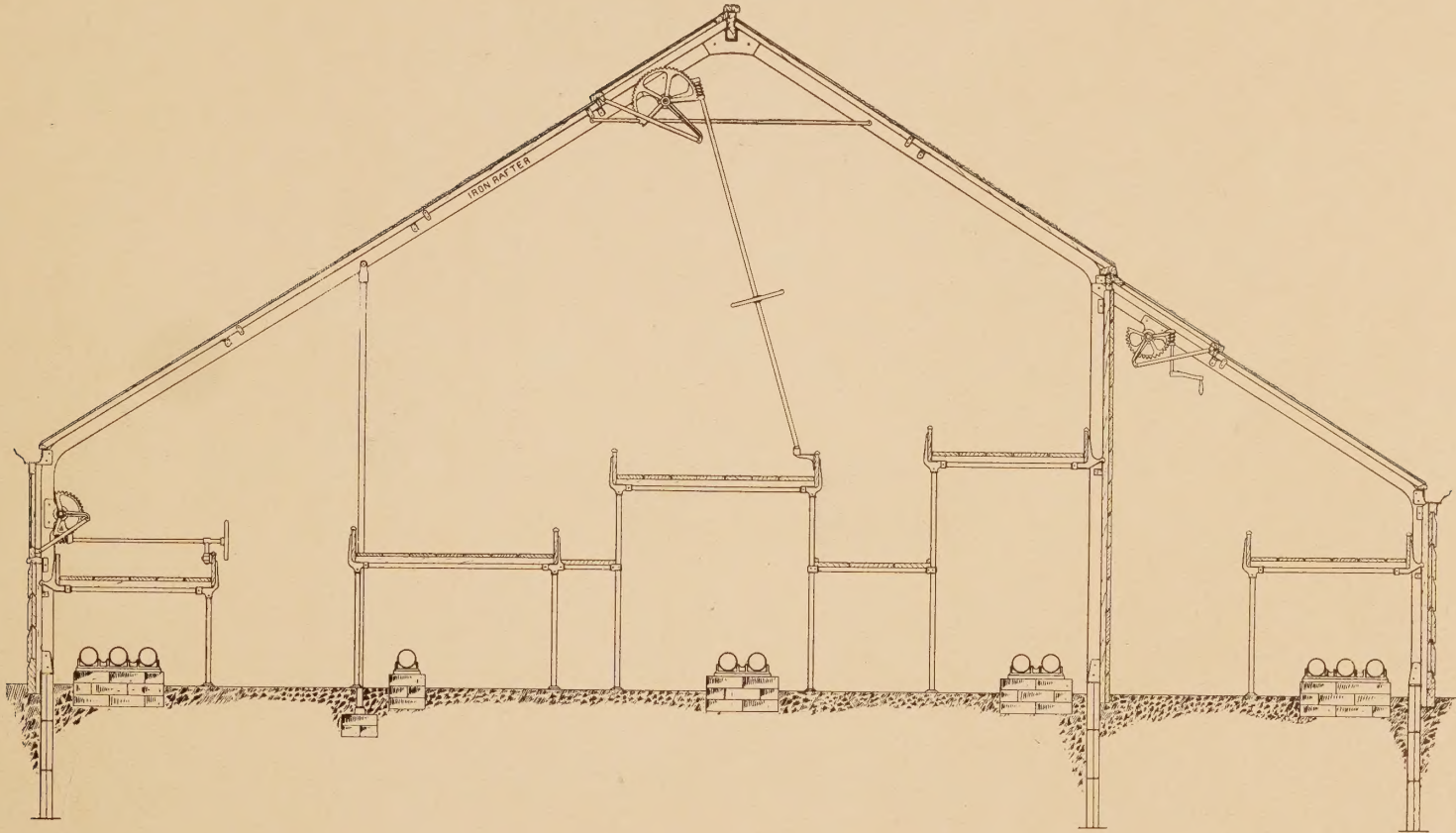
Particular attention is called to the number of purlins used in our construction for the longitudinal bracing of the iron frame ; in addition to the usual four lines of angle-iron roof purlins, we furnish, in all standard commercial houses, two on each side, one of which is at the eaves and one just below the sill line ; this latter also acts as a back support for the benches. In houses where this feature is omitted, the longitudinal stability of the structure has to depend upon the wood work, and is lost when this becomes defective from decay or other reasons.

The cast-iron sills capping the foundations of brick wall houses are of great strength, and are cast in lengths up to nine feet, six inches, with such mitre or tee joint as may be necessary cast on them, thus avoiding the uneven appearance and lack of rigidity which is often seen where these features are not carried out.

It will readily be seen from the above description, that houses of this construction are of great strength and durability, as the most destructible features of the ordinary wooden house are replaced with iron. They are of simple construction and easily erected, the iron frame being complete and fitted ready to be bolted together, before leaving our factory. The ridge, wood glazing bars, ventilating sash and sides are easily attached to the iron frame after erection, and can be readily replaced in future years without disturbing the structure.

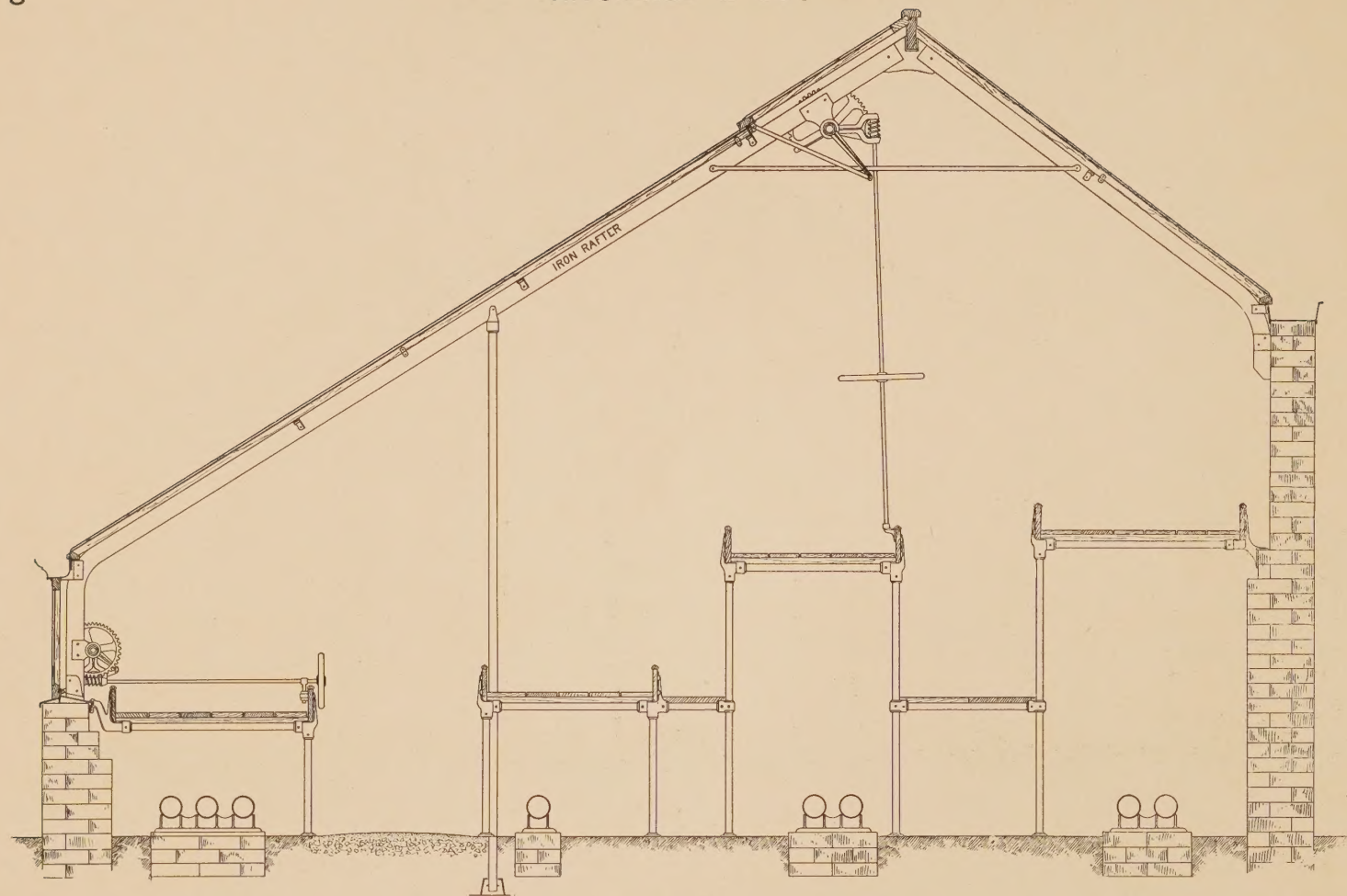


Section of a Standard Three-quarter Span COMMERCIAL ROSE HOUSE (18 to 20 feet wide), with Posts, Rafters, Brackets, Purlins, Columns, all of Iron. Patent Sash-operating Apparatus. Iron Bench Frames, Cypress Bottoms and Sides.



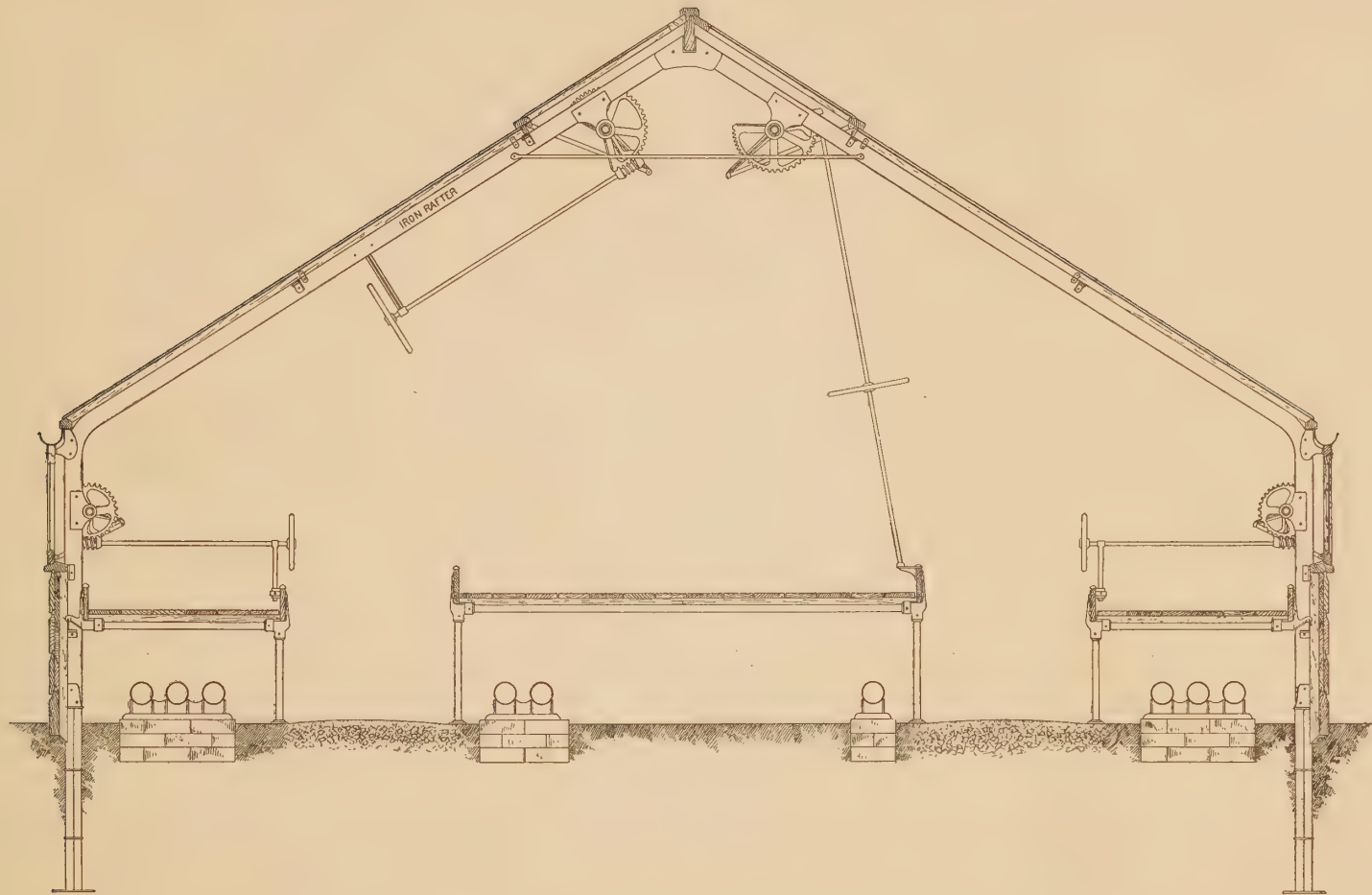
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Three-quarter Span COMMERCIAL ROSE HOUSE (18 to 20 feet wide), with Lean-to Propagating House (6 feet wide) on north Side, with Posts, Rafters, Brackets, Columns, Purlins and Non-Freezable Gutters, all of iron.



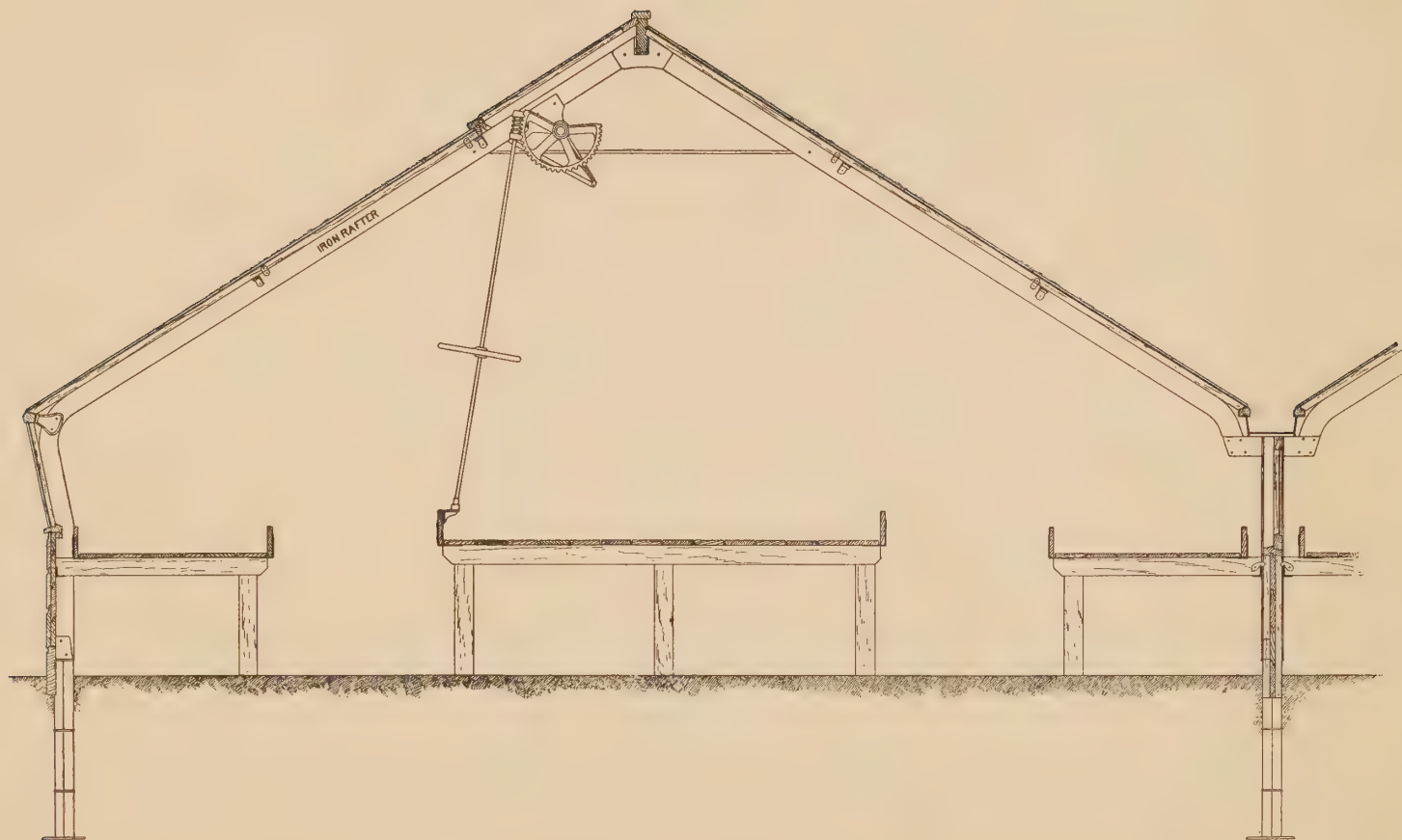
CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Three-quarter Span ROSE HOUSE on Brick Foundations (18 to 20 feet wide), with Sills, Posts, Rafters, Brackets, Columns, Purlins and Non-Freezable Gutters, all of Iron, also Patent Sash-operating Apparatus.



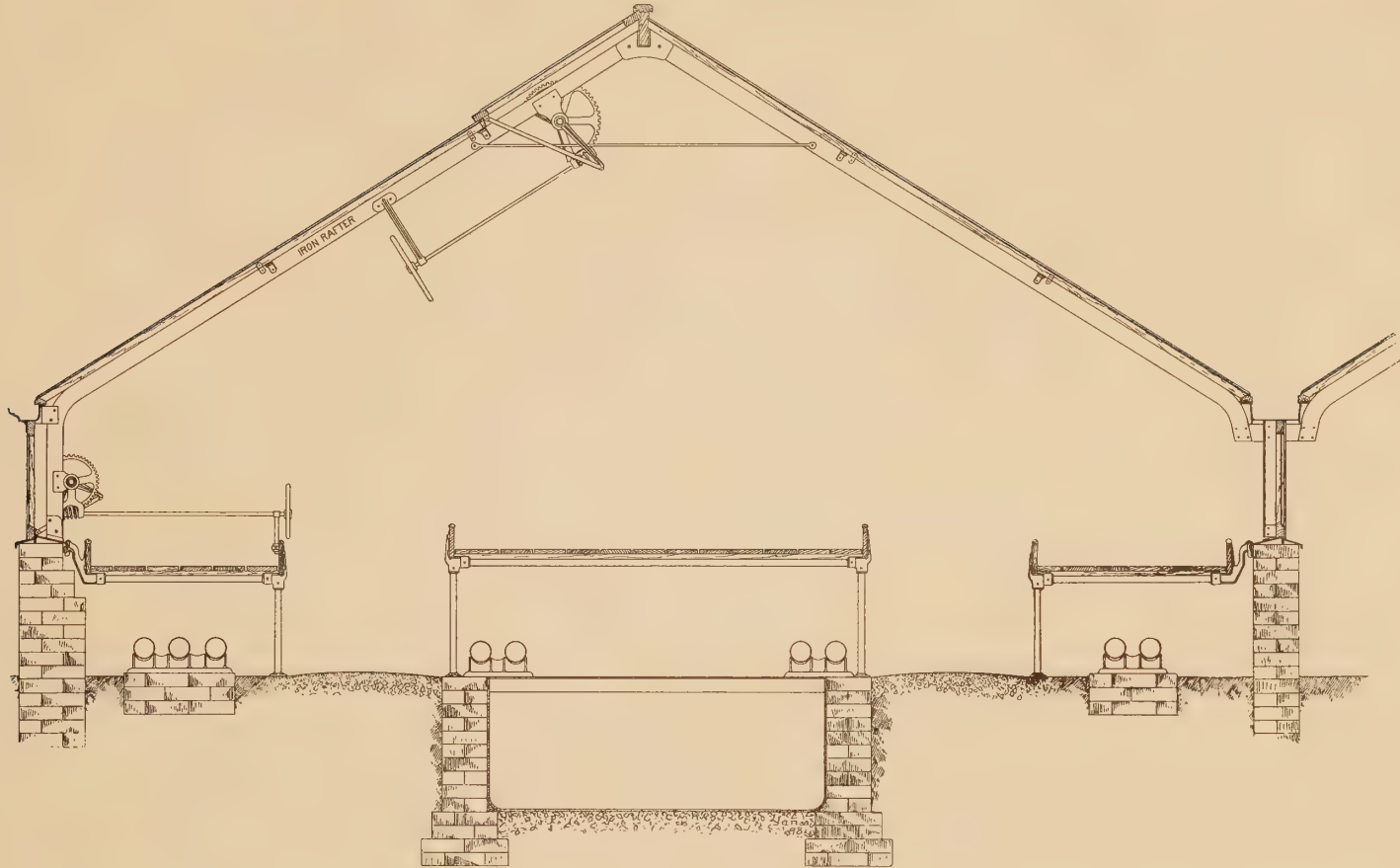
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span COMMERCIAL GREENHOUSE (18 to 20 feet wide), with Posts, Rafters, Brackets, Purlins, Columns and Non-Freezable Gutters, all of Iron, also Patent Sash-operating Apparatus.



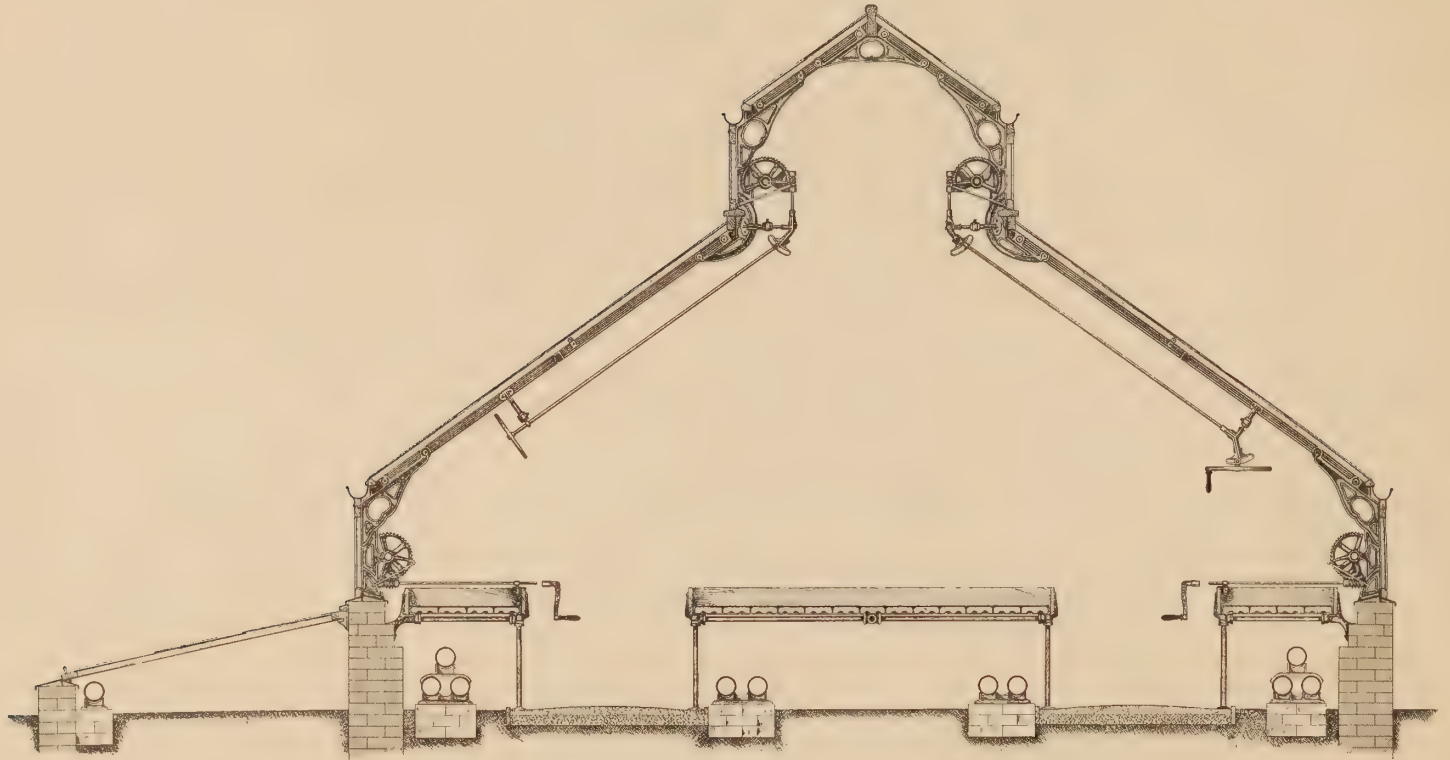
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span "Ridge and Furrow" COMMERCIAL GREENHOUSE (18 to 20 feet wide), with Posts, Rafters, Brackets, Purlins, Columns and Non-Freezable Furrow Gutters, all of Iron, also Patent Sash-operating Apparatus.



CONSTRUCTION PATENTED MARCH 22, 1892.

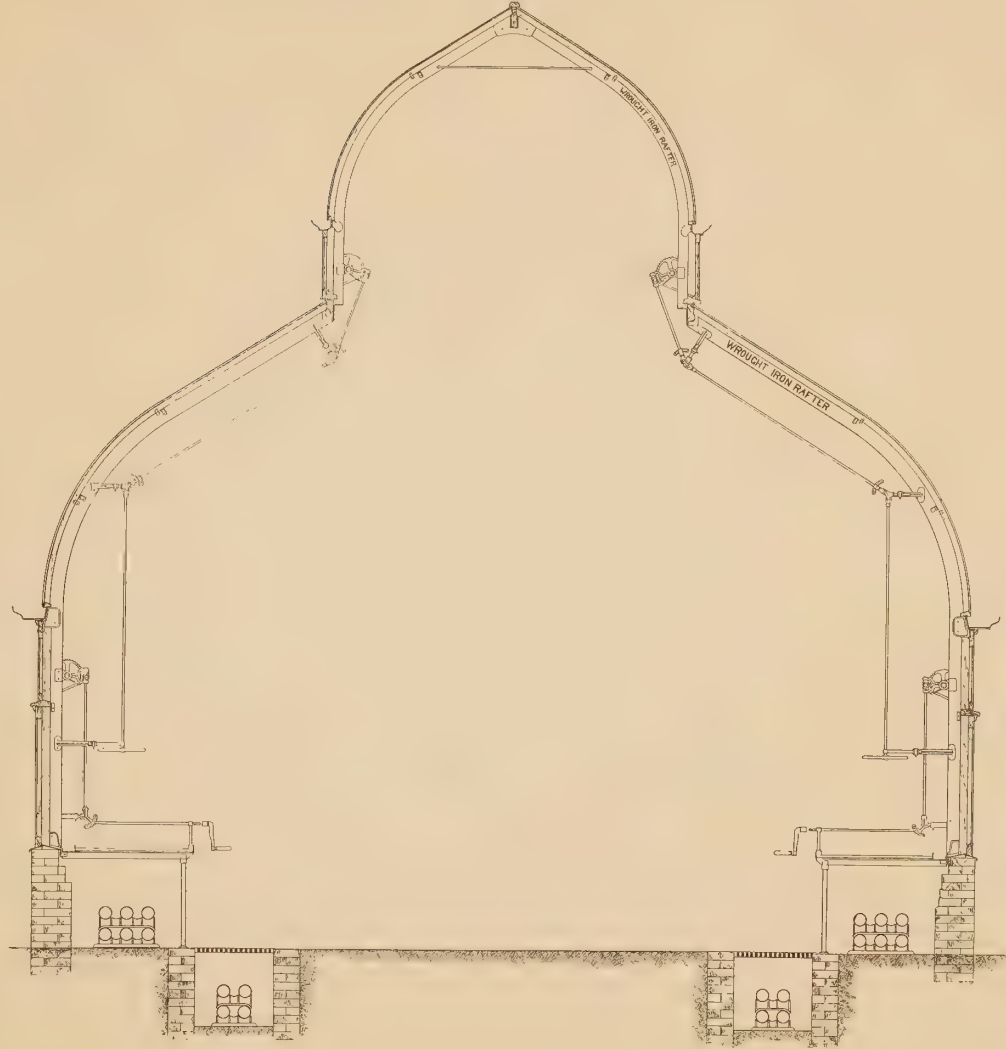
Section of our Standard Even-Span GREENHOUSE on Brick Foundations (18 to 20 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Cypress Bottoms, also Patent Sash-operating Apparatus.



CONSTRUCTION PATENTED MARCH 22, 1892.

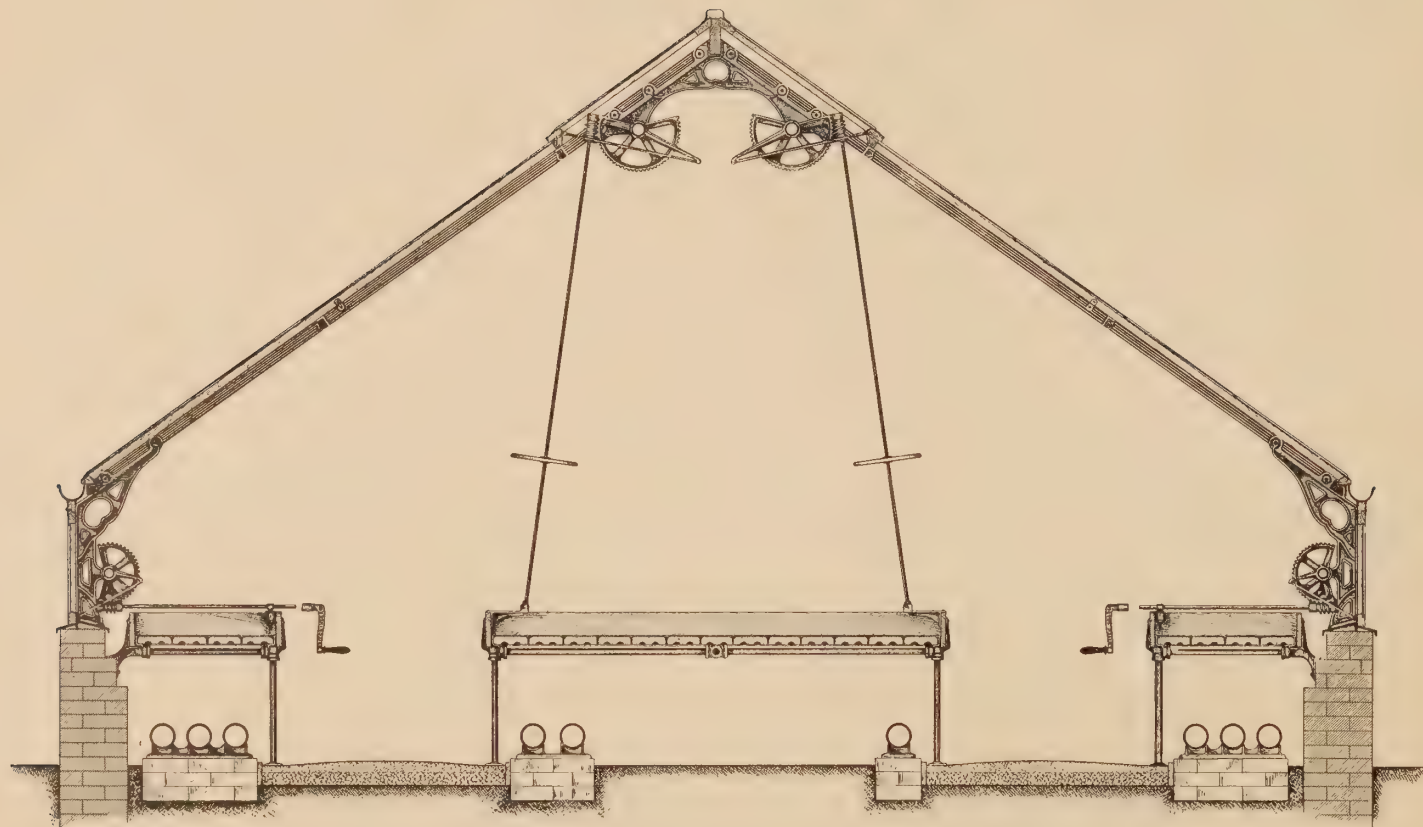
Section of our Even-Span GREENHOUSE on Brick Foundations, with Lantern Roof, with Sills, Posts, Rafters, Purlins and Non-Freezable Gutters, all of Iron, with a Vegetable or Violet Frame attached to one side. Iron Bench Frames with Tile Bottoms, also Patent Sash-operating Apparatus.

Section of our Even-Span Curvilinear PALM HOUSE, on Brick Foundations, with Curvilinear
Lantern Roof, with Sills, Posts, Rafters, Brackets, Purlins and
Non-Freezable Gutters, all of Iron.



CONSTRUCTION PATENTED MARCH 22, 1892.

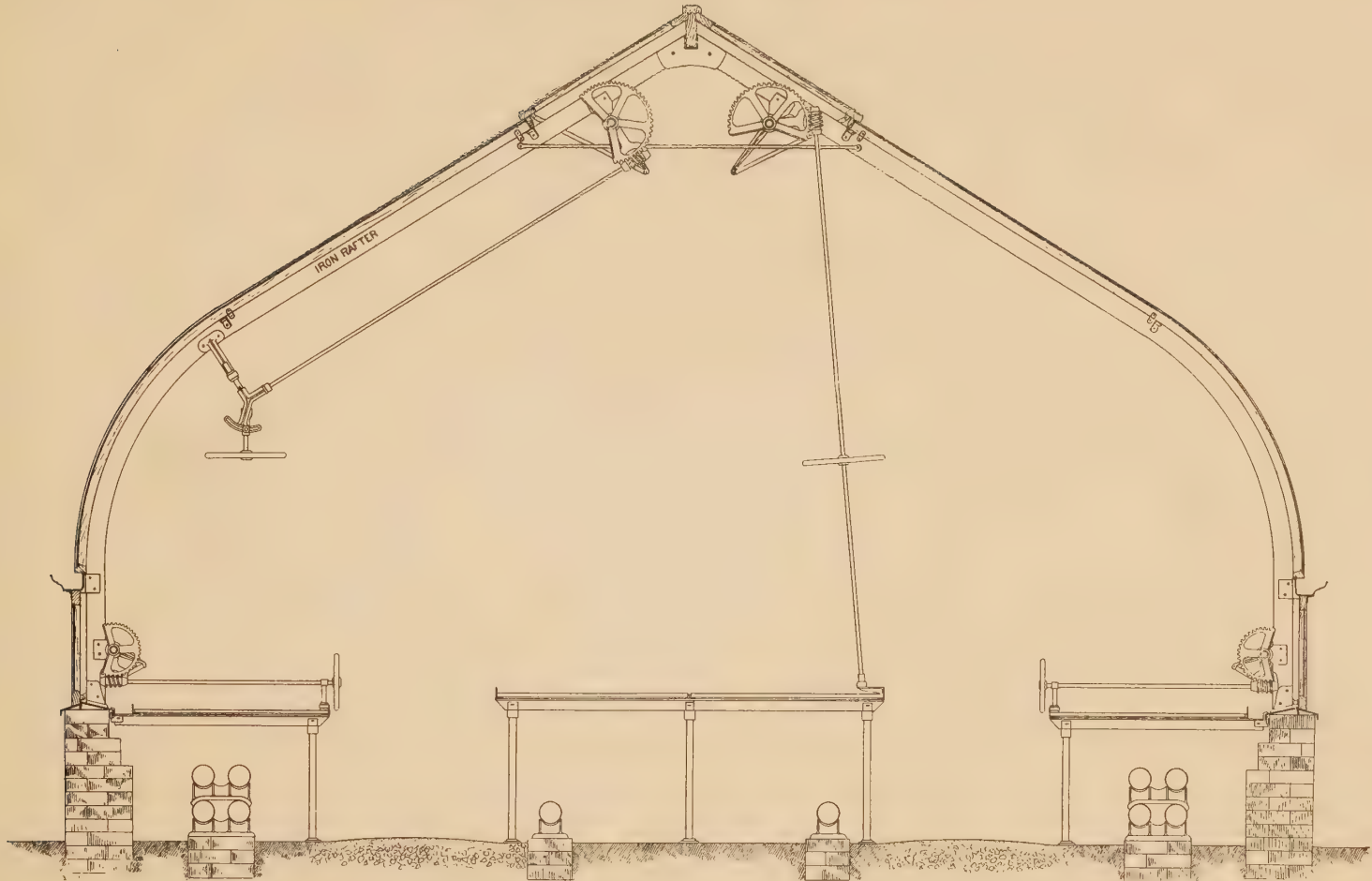
Iron Bench Frames with $\frac{3}{4}$ -inch thick Planed Slate Bottoms, Cast-iron Gratings over
Trenches, containing Heating Pipes, also Patent Sash-operating Apparatus.



THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of an Even-Span GREENHOUSE on Brick Foundations (18 to 20 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Tile Bottoms, also Patent Ventilating Apparatus.

This style of house is eminently suited for private estates, where a neat, economical and perfect structure is desired.

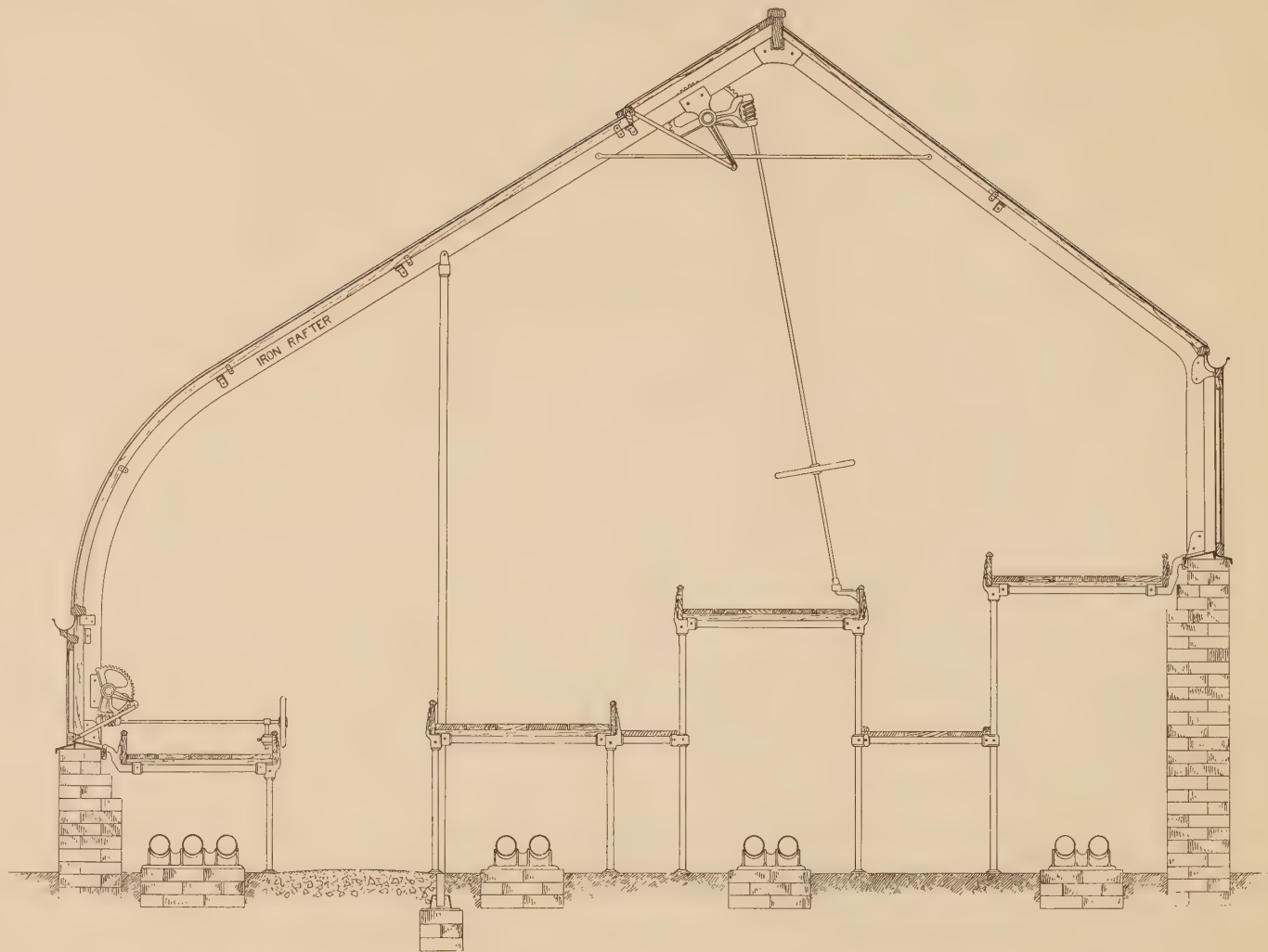


THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of an Even-Span Curvilinear GREENHOUSE on Brick Foundations (18 to 20 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Slate Bottoms, also Patent Ventilating Apparatus.

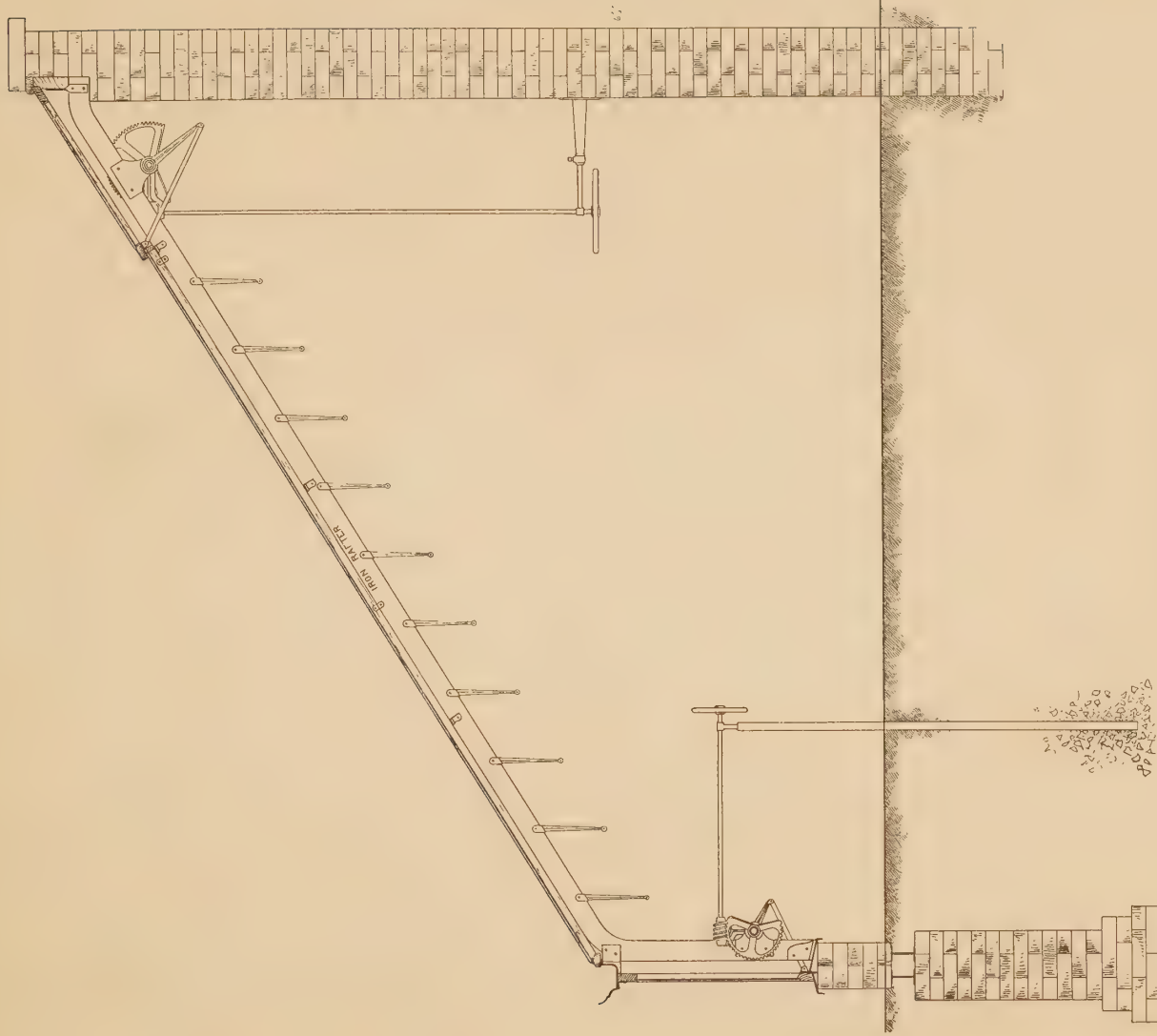
This style of house is eminently adapted for use on private estates for growing small Palms and Exhibition Plants.

Section of our Standard Curvilinear Three-quarter Span GREENHOUSE on Brick Foundations (18 to 20 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Cutters, all of Iron. Iron Bench Frames with Cypress Bottoms also Patent Ventilating Apparatus.



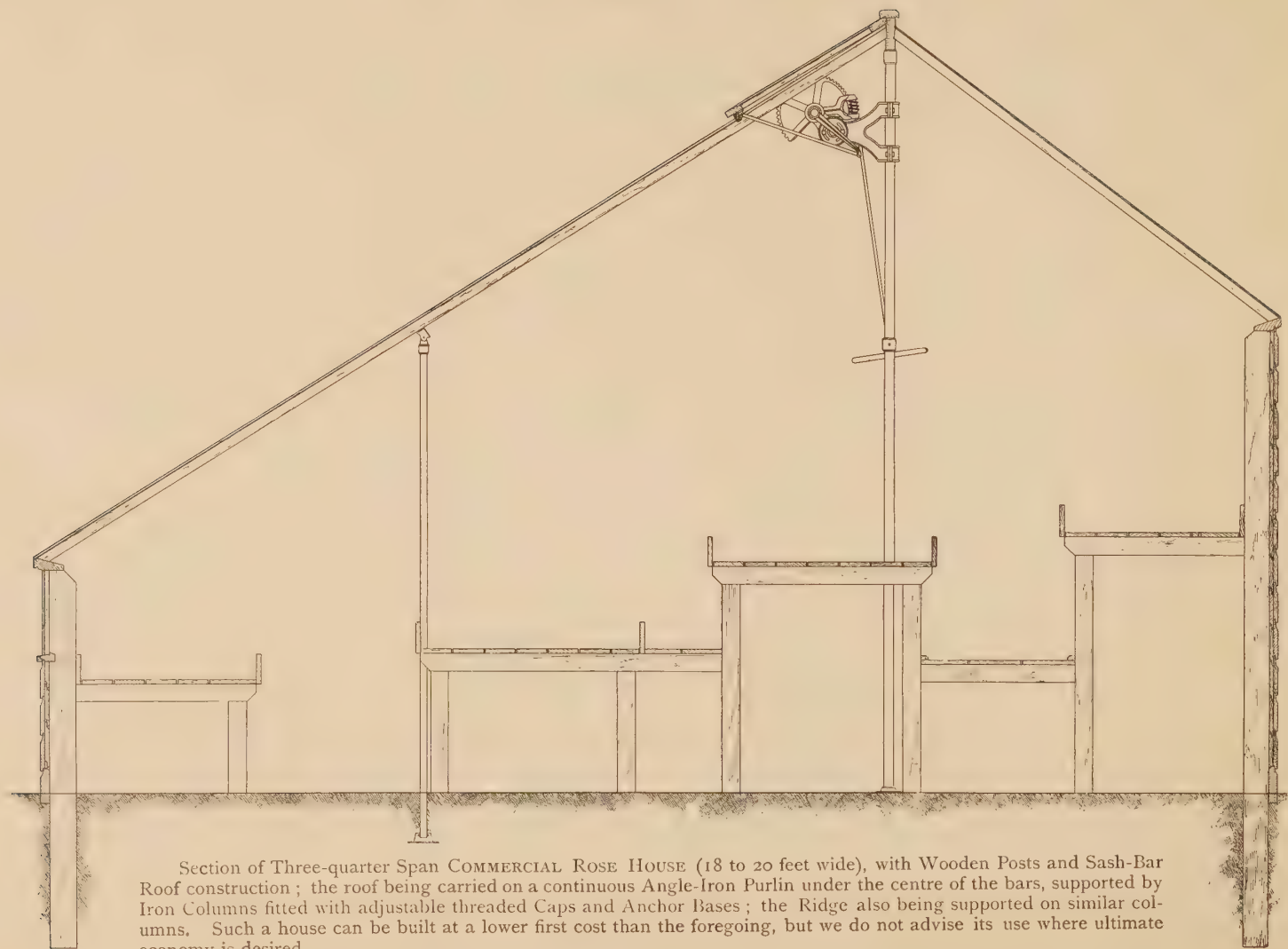
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

This style of house is well suited for use on private estates for growing Roses or Exhibition Plants requiring full sunlight.

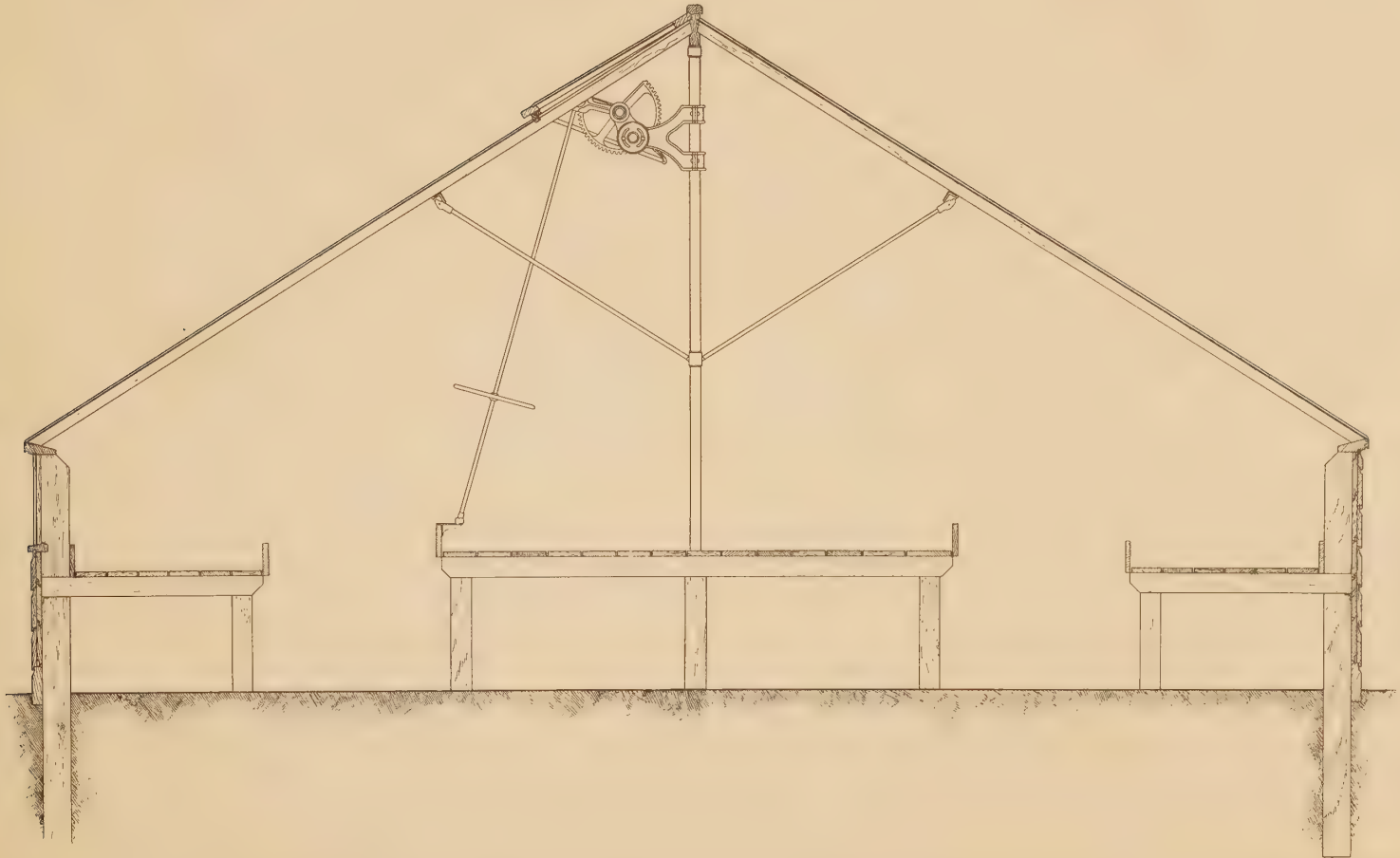


CONSTRUCTION PATENTED MARCH 22, 1892.

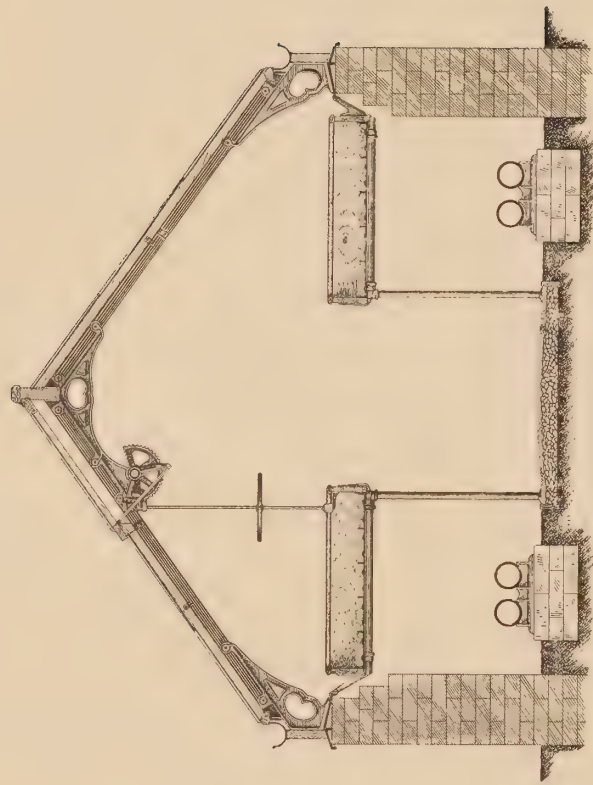
Section of our Lean-to GRAPERY or FRUIT HOUSE, on Brick Foundations, with Sills, Posts,
Rafters, Brackets, Non-Freezable Gutters, Vine Hangers, all of Iron,
also Patent Sash-operating Apparatus.



Section of Three-quarter Span COMMERCIAL ROSE HOUSE (18 to 20 feet wide), with Wooden Posts and Sash-Bar Roof construction ; the roof being carried on a continuous Angle-Iron Purlin under the centre of the bars, supported by Iron Columns fitted with adjustable threaded Caps and Anchor Bases ; the Ridge also being supported on similar columns. Such a house can be built at a lower first cost than the foregoing, but we do not advise its use where ultimate economy is desired.

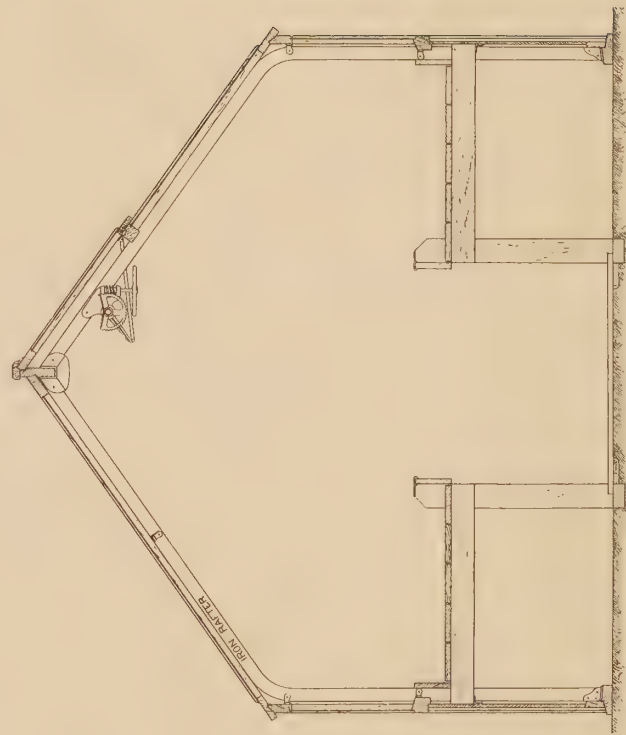


Section of Even-Span COMMERCIAL HOUSE (18 to 20 feet wide), with Wooden Post and Sash Bar Room Construction ; Roof being supported by Iron Columns under the Ridge, with Spur Braces on each side attached to Iron Purlins, giving an intermediate support between Eaves and Ridge.



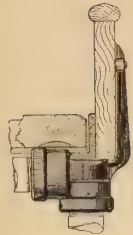
Section of our Standard (10 feet wide), GREENHOUSE for Bedding Stock, Vegetables, etc., on Brick Foundations, with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron.

Iron Bench Frames with Patent Tile Bottoms, also Patent Sash-operating Apparatus.

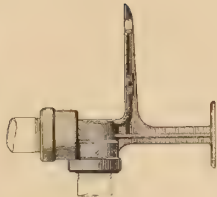


Section of Even-Span GREENHOUSE similar to above but of cheaper portable construction.

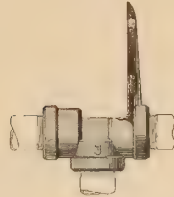
FITTINGS FOR IRON BENCH FRAMES.
CONSTRUCTED WITH TILE OR OTHER BOTTOMS.



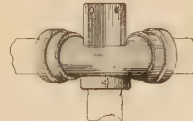
No. 1.



No. 2.



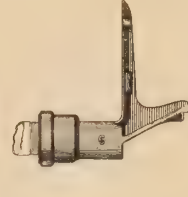
No. 3.



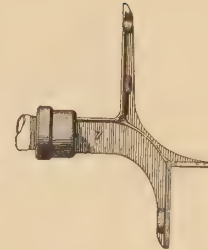
No. 4.



No. 5.



No. 6.



No. 7.



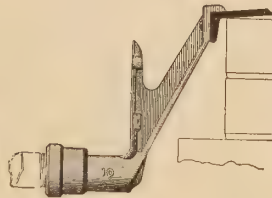
No. 8.



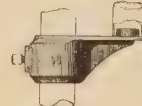
No. 9.



No. 9A.



No. 10.



No. 11.



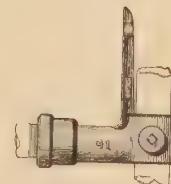
No. 14.



No. 37.



No. 37A.



No. 41.

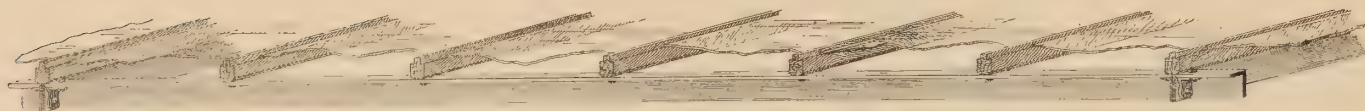


No. 43.

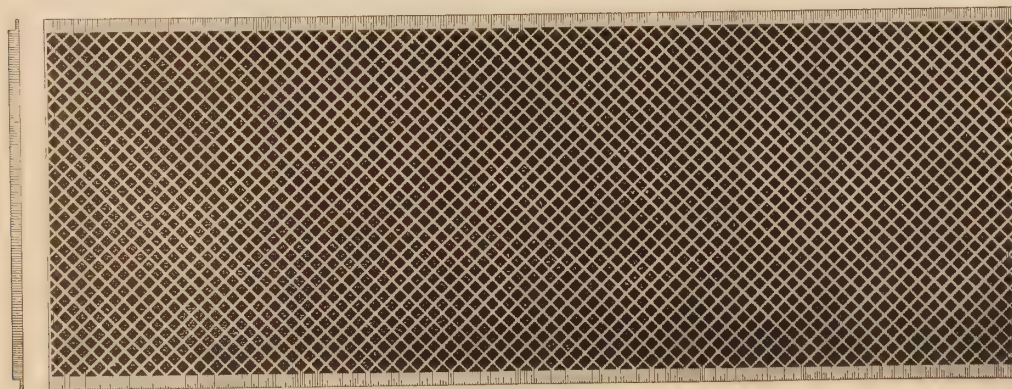
The above illustrated FITTINGS are all Standard, and meet all the requirements of ordinary Benches, either for Even or Three-quarter Span Houses.
Special Patterns will be made when necessary to meet special conditions.



Our Standard GREENHOUSE CREST, made of Cast-iron in several heights, with suitable finials.
Other designs are made to suit special conditions.



Longitudinal Section of GREENHOUSE ROOF, showing relation between Iron Rafters, Iron Purlins, Wood Glazing Bars and Glass.



Our Standard CAST-IRON GRATINGS for Walks.
Made of any desired Width or Shape. This Grating is of great strength, weighing 12 lbs. per square foot.

IRON COLUMNS FOR GREENHOUSE ROOFS.

23



CAP FOR ANGLE
IRON PURLIN.



No. 1. 1 3/8 in. external diameter (1 in. wrought-iron pipe).



No. 2. 1 5/8 in. external diameter (1 1/4 in. wrought-iron pipe).



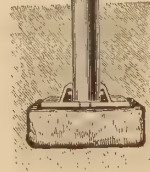
CAP FOR RIDGE
COLUMN.



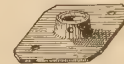
PLATE BASE FOR
RIDGE COLUMN.



CAP FOR
IRON RAFTER.



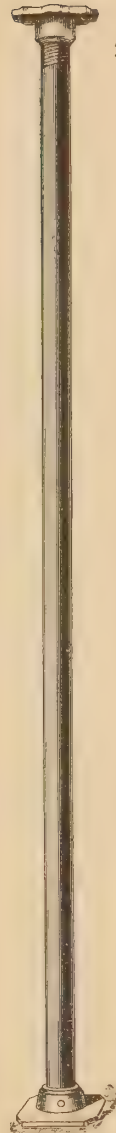
SWIVEL CAP FOR
WOOD RAFTER.



ANCHOR BASE FOR
RAFTER COLUMN.



No. 3. 1 3/8 in. external diameter (1 1/2 in. wrought-iron pipe).



No. 4. 2 5/8 in. external diameter (2 in. wrought-iron pipe).

Each of our Columns is of one piece of pipe only, no short lengths joined by couplings being used. The THREAD at their upper end is cut parallel so as to insure a good fit into the CAP at any point it may be screwed up to, the thread being of sufficient length to allow of ample adjustment.

On the following pages will be found photographic reproductions of a few structures we have lately erected, which may serve as a guide in determining the style or arrangement of houses to be built.



Four of our Standard ROSE HOUSES, with cross connecting house, designed and erected by us in Paterson, N. J.

EVEN-SPAN COMMERCIAL GREENHOUSE.



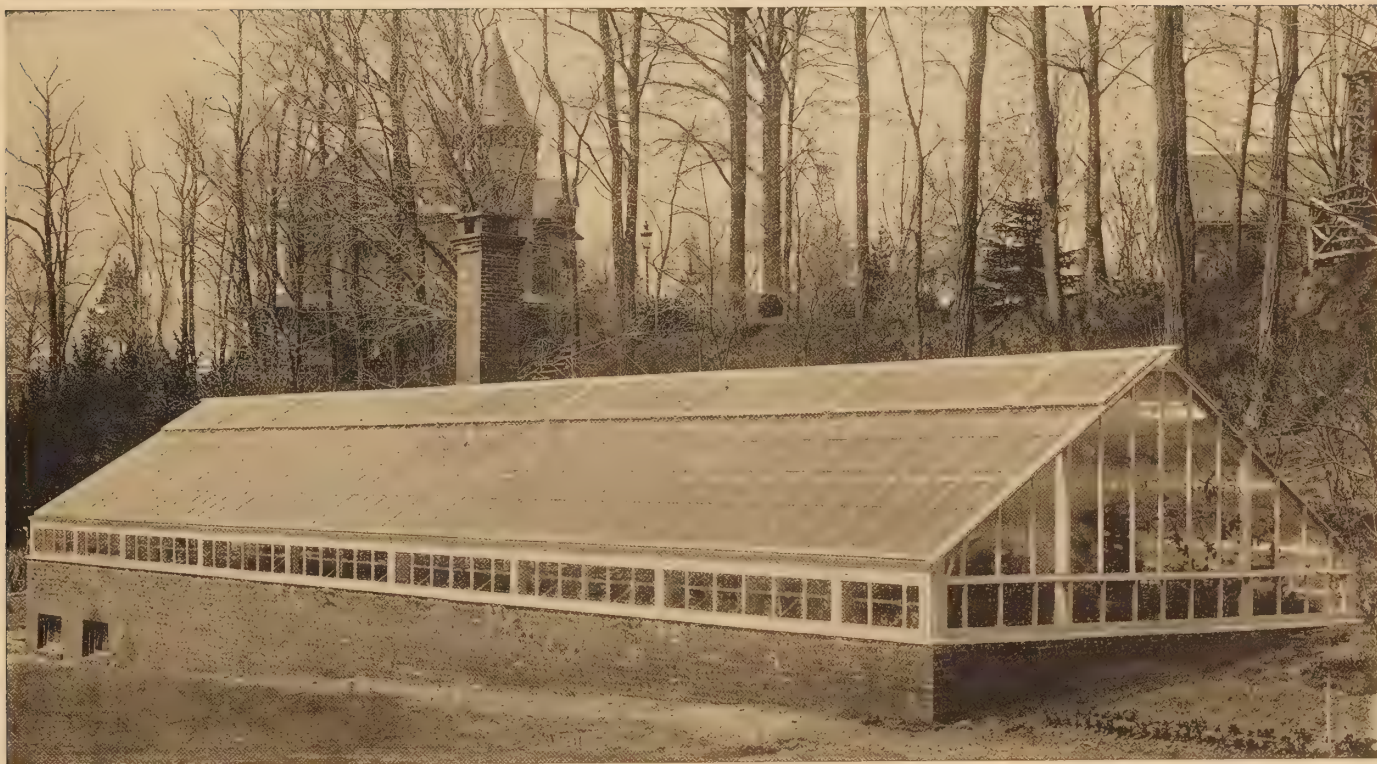
Designed and erected by us in the East Side Park, at Paterson, N. J.

RANGE OF EVEN-SPAN GREEN HOUSES.



Range of Houses on Brick Foundation, designed and erected by us in Hartford, Conn.

EVEN-SPAN GREENHOUSE.



Even-Span GREENHOUSE, on Brick Foundations, designed and erected by us in Sea Cliff, N. Y.

EVEN-SPAN GREENHOUSE.

WITH HIPPED END AND GABLE ENTRANCE.



Designed and erected by us in Chicago, Ill. The work room and gardener's cottage are seen at the farther end of the Greenhouse,

THREE-QUARTER SPAN COMMERCIAL HOUSE.



Designed and erected by us in Morristown, N. J.

With cold frame on south side, and two sections partitioned off for workroom, with boiler cellar under.

CURVILINEAR EVEN-SPAN GREENHOUSE.



Designed and erected by us in Morristown, N. J.

The ends of this house are left in readiness for future extensions.

CURVILINEAR PALM HOUSE AND CONSERVATORIES.



Designed and erected by us in Brooklyn.

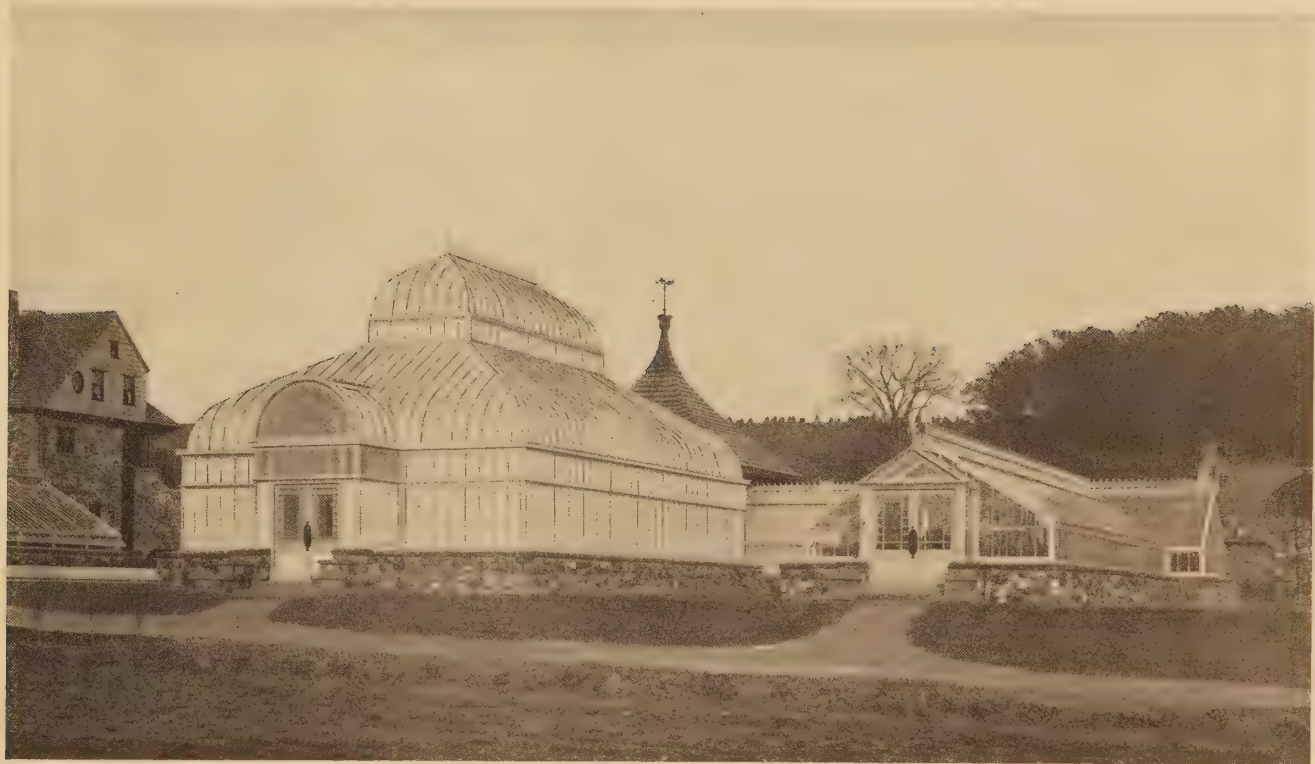
CURVILINEAR PALM AND RANGES OF GREEN HOUSES.



Designed and erected by us in Higham, Mass.

The PALM HOUSE having a Curvilinear Lantern on Roof, and Vestibule Entrance on Corner.

CURVILINEAR PALM HOUSE WITH STRAIGHT-LINE GREEN HOUSES.



Designed and erected by us at Millbrook, N. Y.

The PALM HOUSE having a Curvilinear Lantern and Curvilinear Vestibule Entrance.

HITCHINGS & CO.,
CURVILINEAR PALM HOUSE.



Designed and erected by us at Fishkill-on-the-Hudson, N. Y. With Octagonal End, and Curvilinear Connecting Wing leading to Dining Room.

CURVILINEAR PALM HOUSE.



With large Circular-Roofed Entrance and Even-Span GREENHOUSE connected at the rear. This house was designed and erected by us at the World's Fair, and received Four Distinct Awards as follows: For Horticultural Architecture and Construction, Patent Cast-Iron Non-Freezable Gutters, Iron Bench Frames with Tile Bottoms, and Corrugated Fire-Box Boilers for Greenhouse Heating. This structure has been removed to the eastern entrance of Greenwood Cemetery, where, by the courtesy of its present owners, Messrs. Jas. Weir, Jr., & Son, it may be inspected by persons interested.

RANGE OF PALM AND GREEN HOUSES.

(FRONT VIEW.)

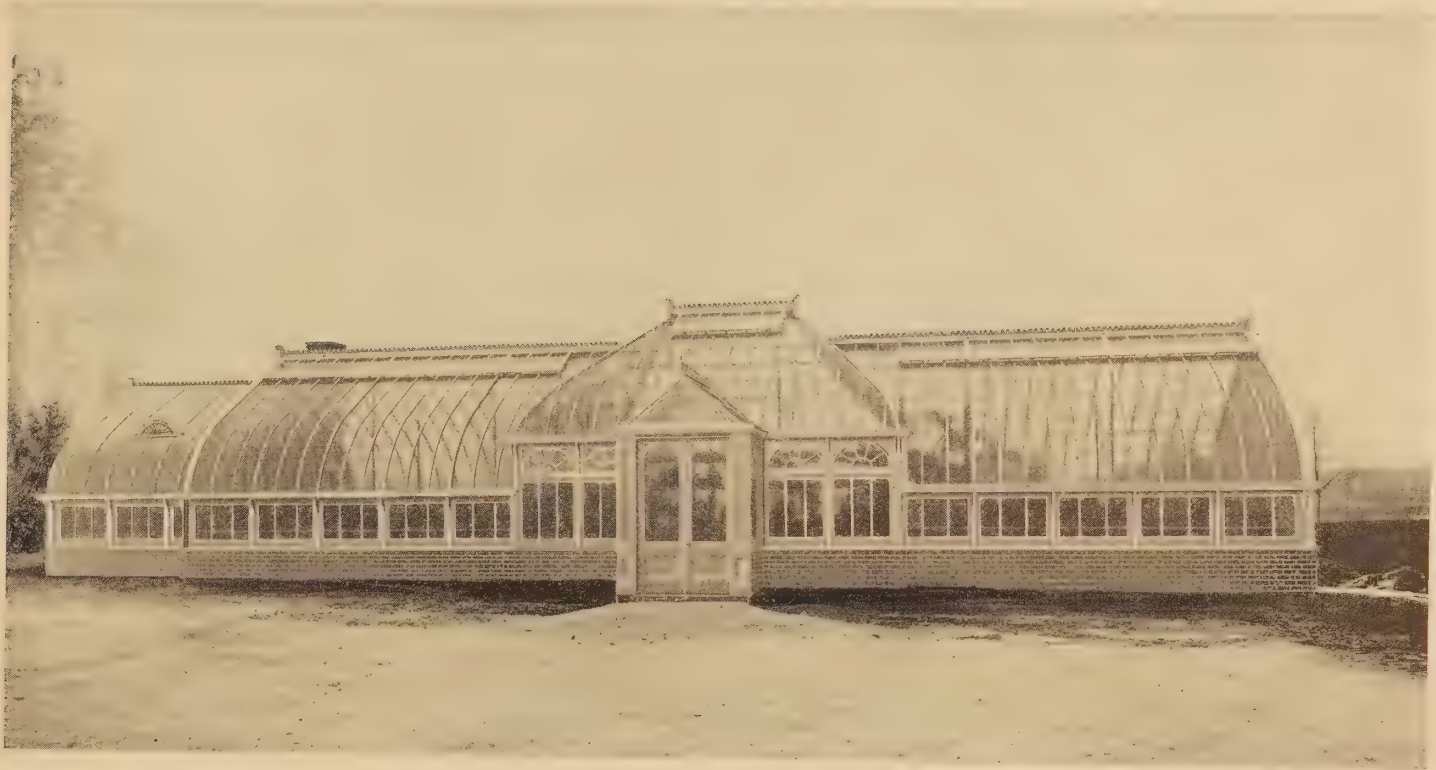


Designed and erected by us at Watkins, N. Y.

This is one of the most compact and perfectly constructed ranges of private glass erected in this country ; it consists of Curvilinear PALM HOUSE, CONSERVATORY, ROSE, STORE and COOL HOUSES and large work room, and Straight-Line GREEN, VEGETABLE, CARNATION and VIOLET HOUSES.

EVEN-SPAN CURVILINEAR GREENHOUSE.

WITH THE ROOF OF THE CENTRE DIVISION ELEVATED FOR THE ACCOMMODATION OF PALMS AND LARGE PLANTS.

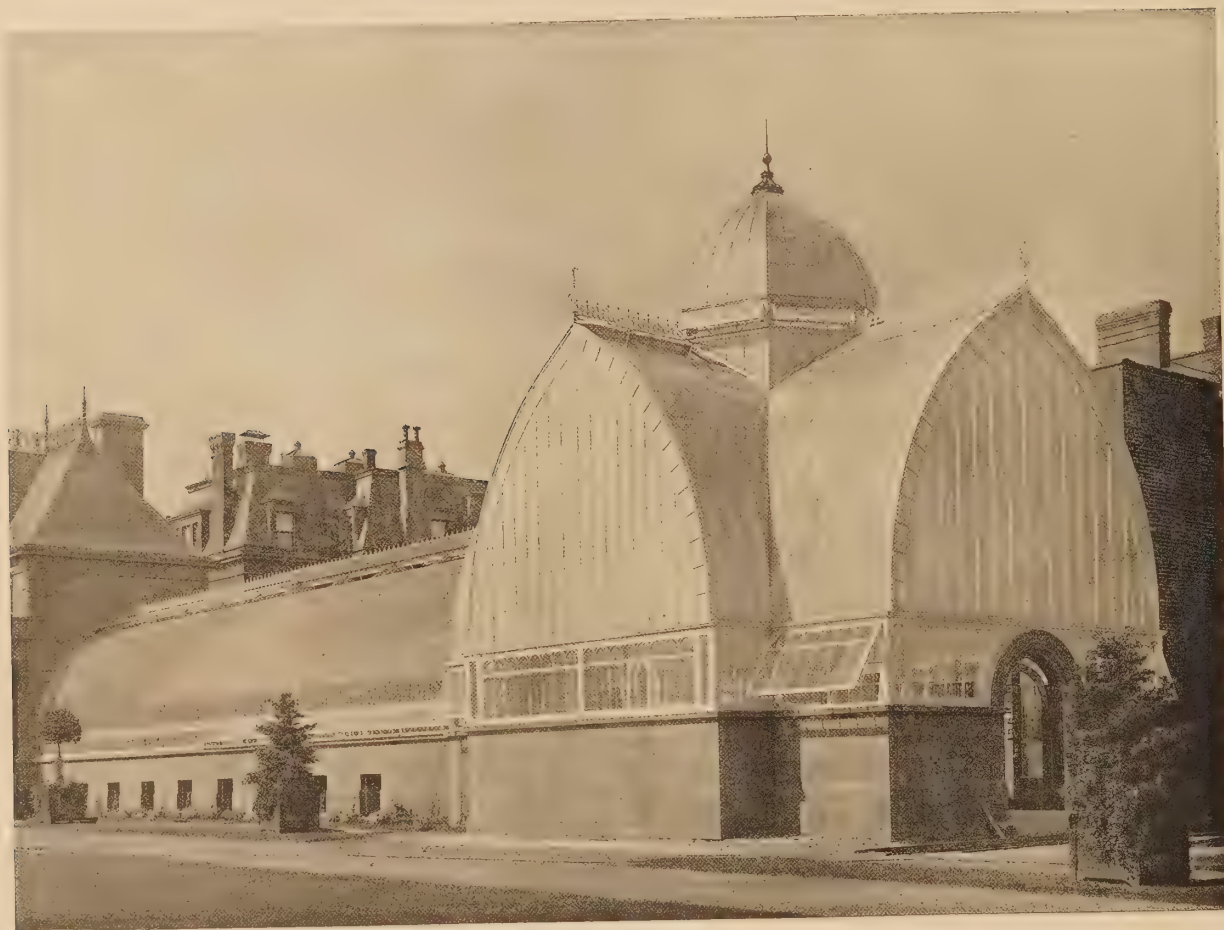


Designed and erected by us at Somerville, N. J.

This style of house is particularly well adapted for small Private Grounds, being ornamental without sacrificing any of the practical features of the Commercial House. It may be divided into two or more compartments, for the growing of plants requiring different temperatures.

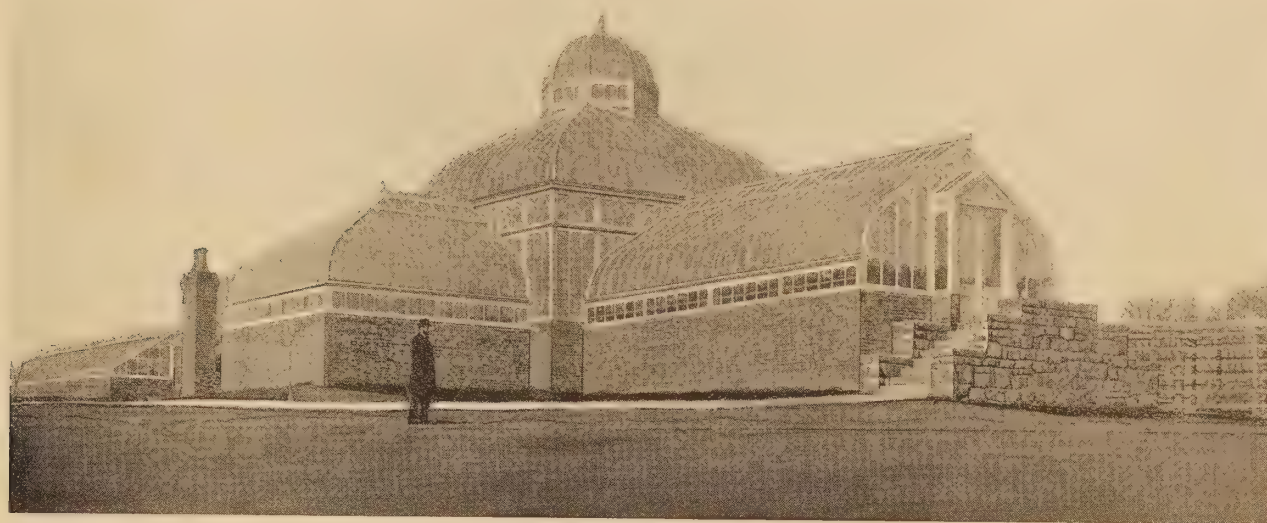
HITCHINGS & CO.,

CURVILINEAR PALM AND GREEN HOUSES.



Designed and erected by us in Chicago, Ill.

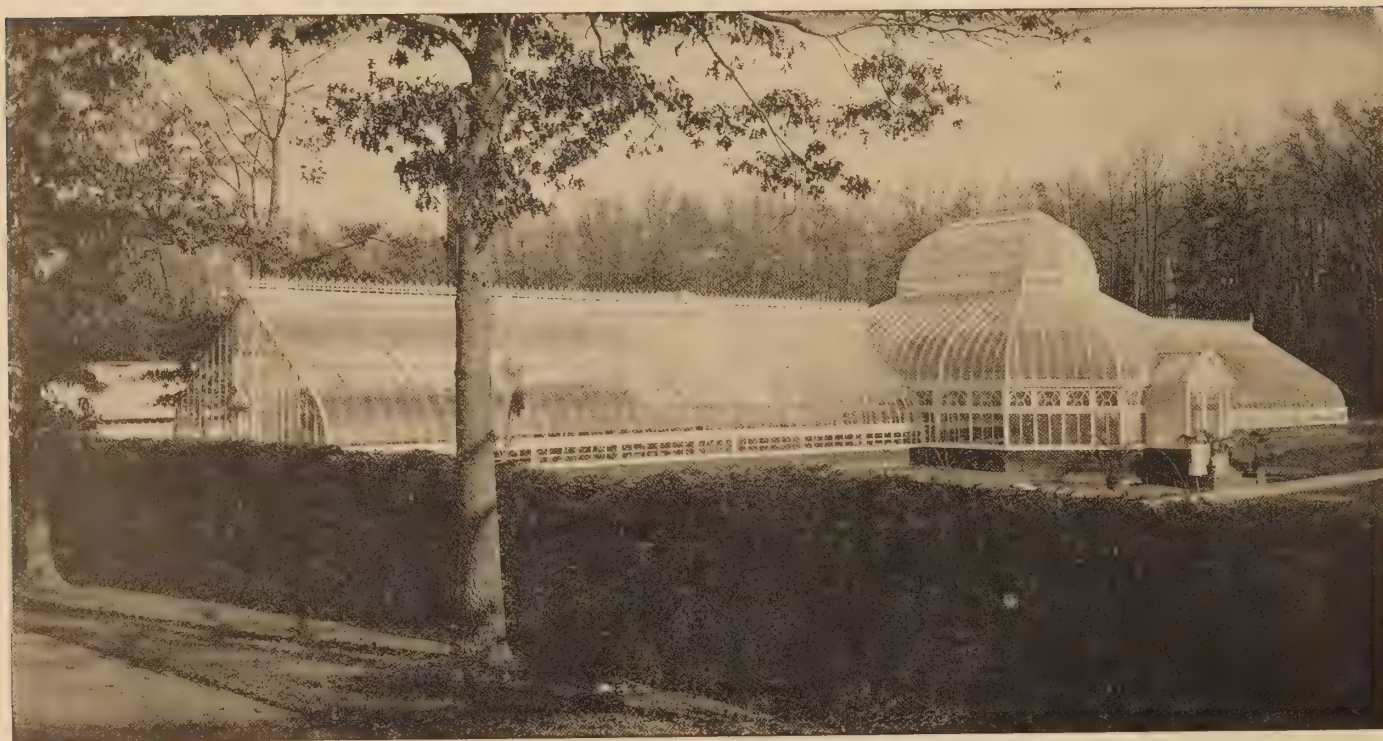
RANGE OF PALM AND GREEN HOUSES.
(OCTAGONAL CURVILINEAR LANTERN ON PALM HOUSE.)



Designed and erected by us in Bernardsville, N. J.

This range consists of PALM HOUSE, CONSERVATORY, ROSE, GREEN, STOVE, PROPAGATING and VEGETABLE HOUSES, also a COMBINATION CONSERVATORY and SMOKING ROOM.

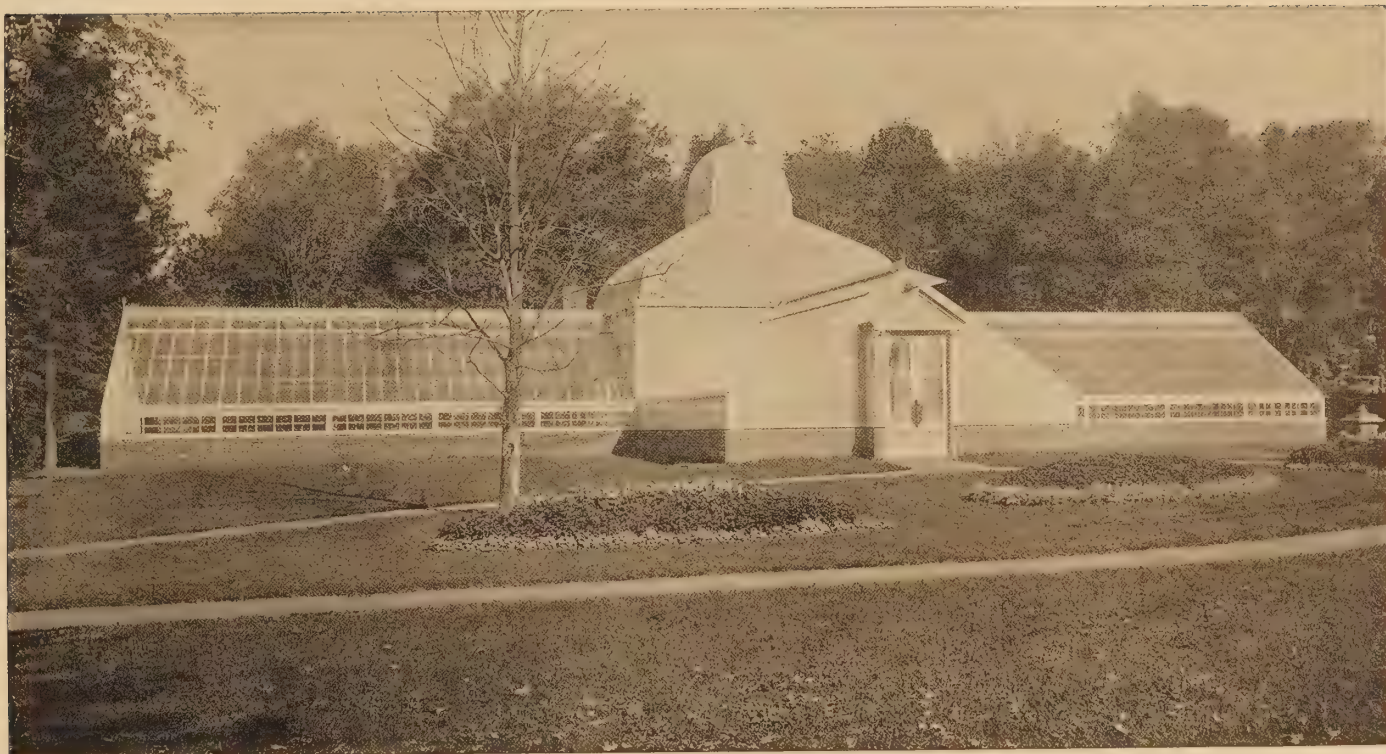
CURVILINEAR PALM AND PLANT HOUSES.



Designed and erected by us in North Easton, Mass.

The PALM HOUSE having an Octagonal Front and Curvilinear Lantern on Roof. We also constructed GRAPERY, PEACH and VEGETABLE HOUSES in the rear of the above illustrated houses.

PALM AND GREEN HOUSES.



Designed and erected by us in Newport, R. I.

Consisting of PALM, GREEN and FRUIT HOUSES, and large potting shed at the rear.

HITCHINGS & CO.,
CONSERVATORY ATTACHED TO DWELLING.



Designed and erected by us at Newton, N. J.

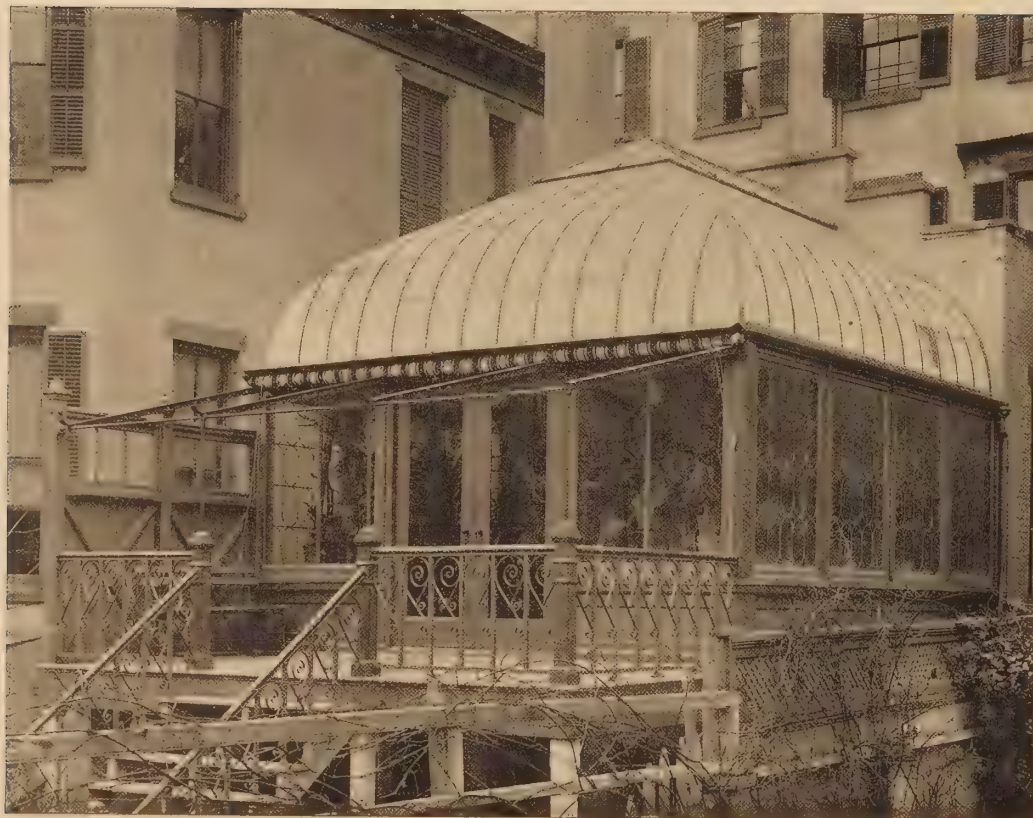
COMMERCIAL GREENHOUSE.
WITH STORE AND OFFICE ATTACHED.



Designed and erected by us at Danvers, Mass.

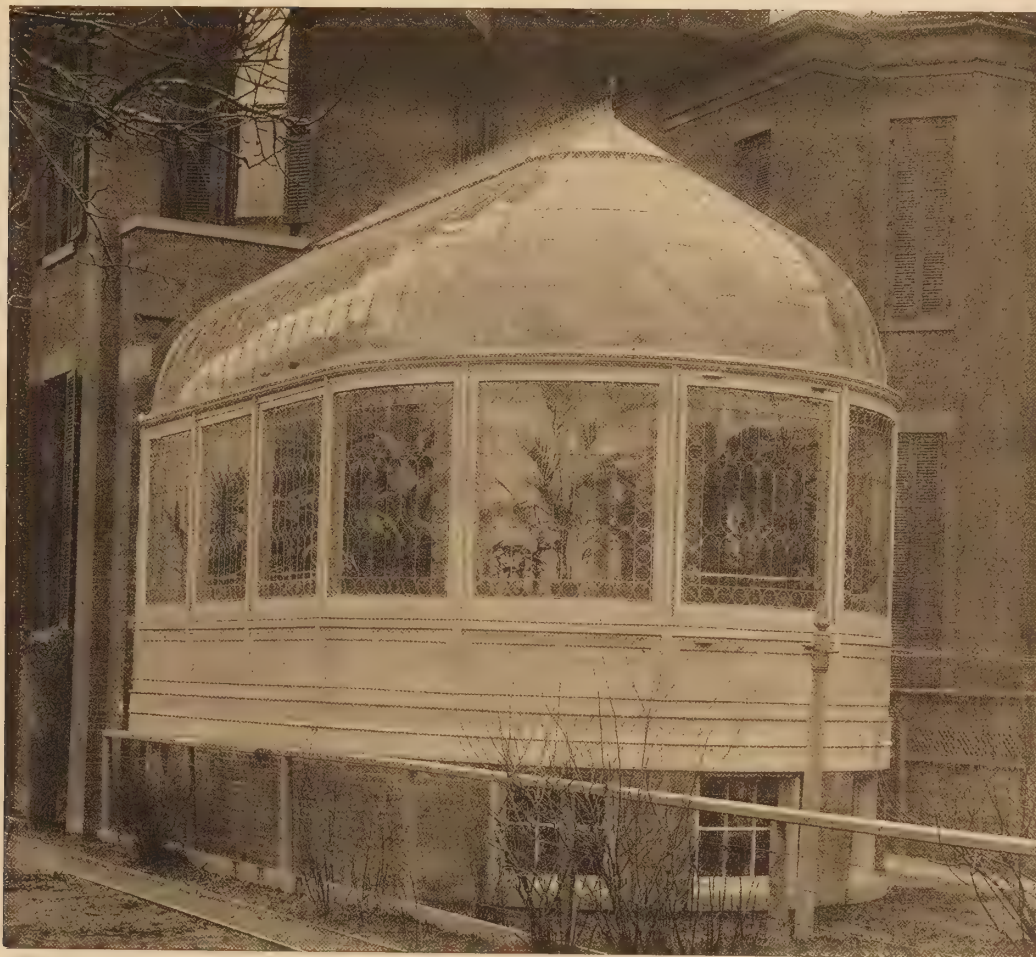
CURVILINEAR CONSERVATORY.

(WITH HIPPED END.)



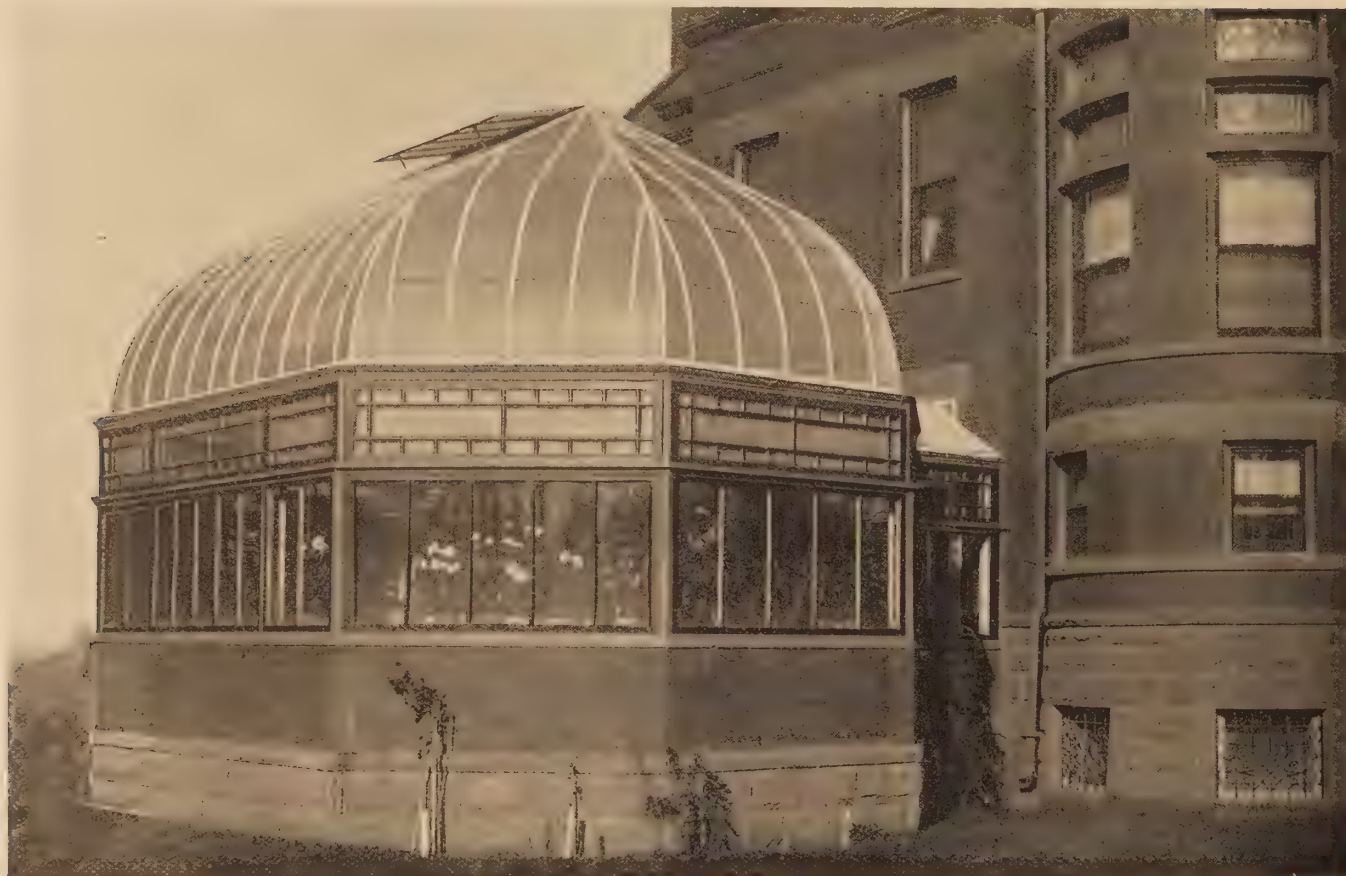
Designed and erected by us in Brooklyn, N. Y.

CURVILINEAR CONSERVATORY. (WITH CIRCULAR END.)



Designed and erected by us in Brooklyn, N. Y.

OCTAGON CURVILINEAR CONSERVATORY.



With Connecting Passage to Residence. Designed by us and erected in Denver, Col.

233 MERCER STREET, NEW YORK.

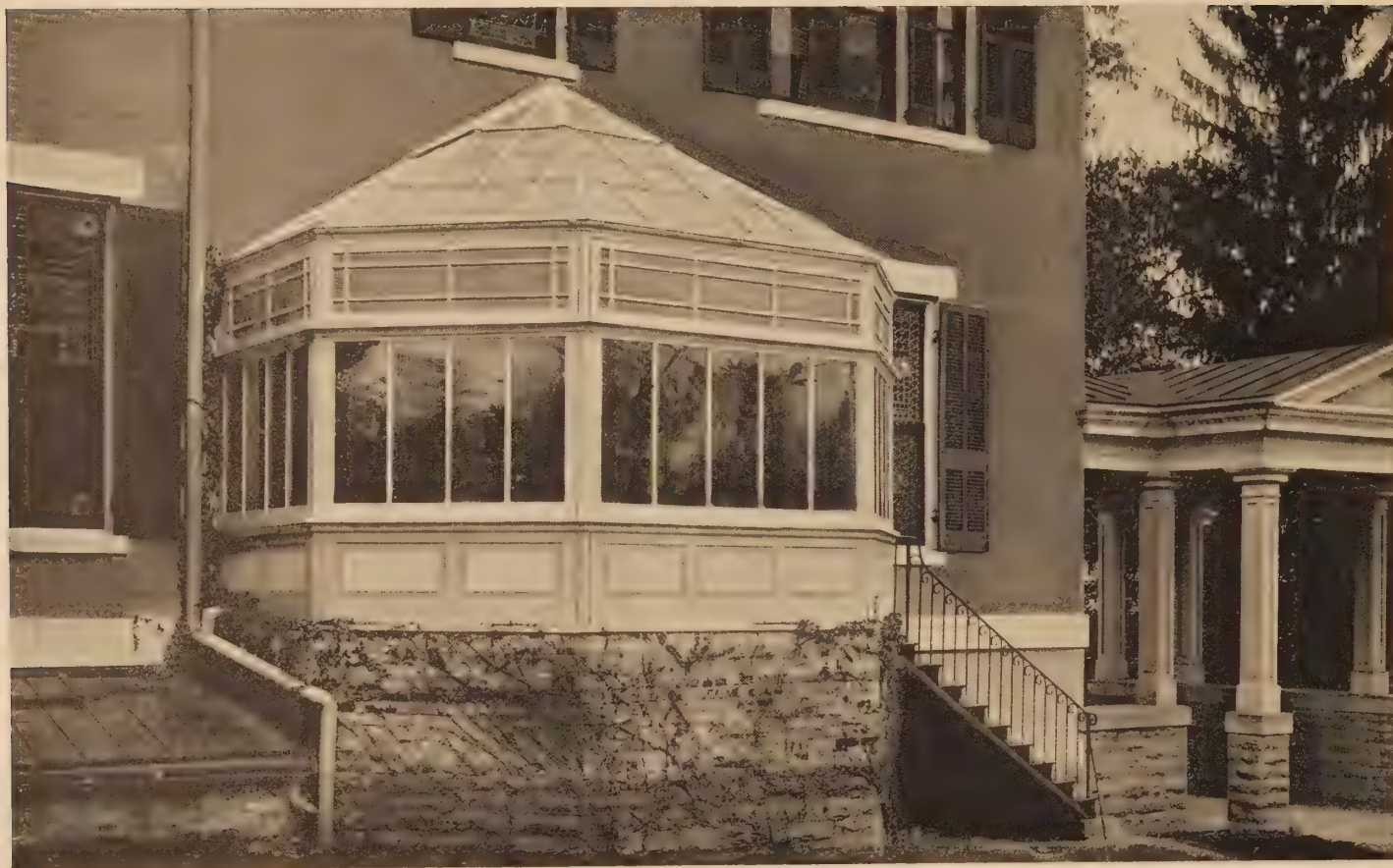
47

CURVILINEAR CONSERVATORY.



With Hipped End and Polished Plate Glass Sides, designed and erected by us at Hartford, Conn.

STRAIGHT LINE OCTAGON CONSERVATORY.



Designed and erected by us in Cincinnati, O.

CURVILINEAR ROOF SUN PARLOR.



Designed and erected by us at Rockwood Hall, Tarrytown, N. Y.

CIRCULAR CURVILINEAR CONSERVATORY.



Designed and erected by us in New York City.

CONSERVATORY ATTACHED TO VERANDA.

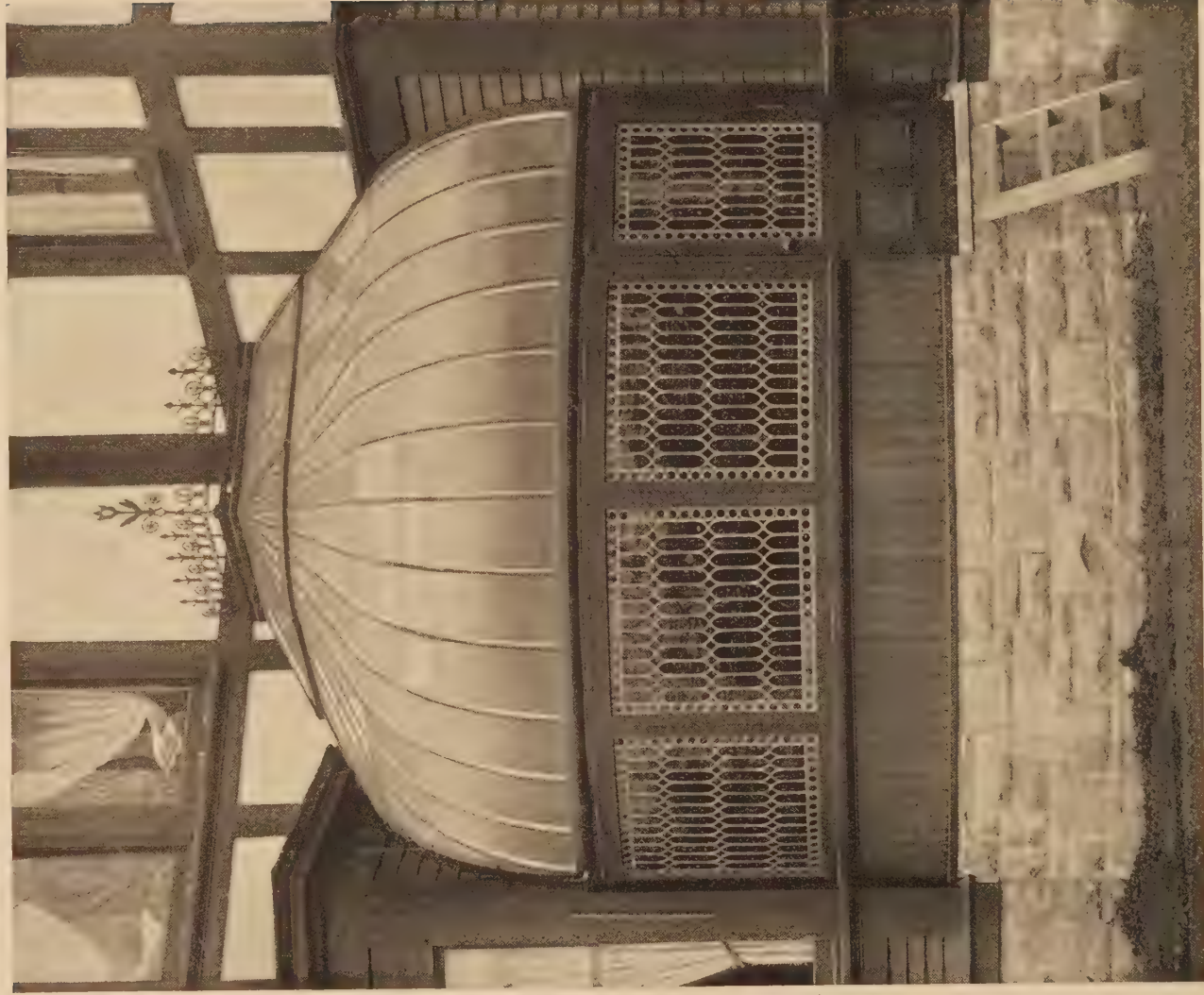


Designed and erected by us in Morristown, N. J.

A QUARTER CIRCLE CONSERVATORY.

52

HITCHINGS & CO.,

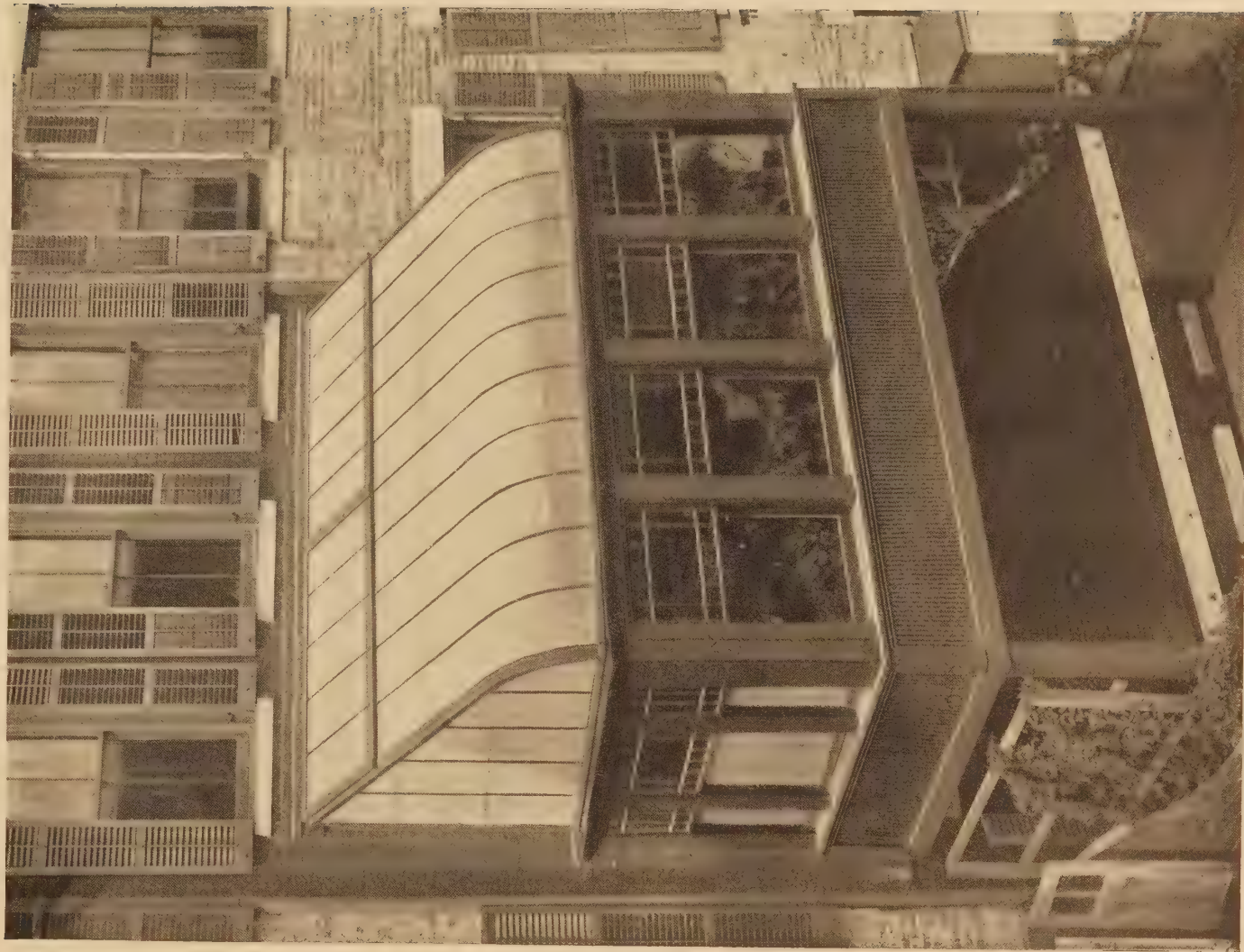


Designed and erected by us in Morristown, N. J.

A CURVILINEAR LEAN-TO CONSERVATORY.

233 MERCER STREET, NEW YORK.

53



Designed and erected by us in New York City.

ENCLOSURE FOR FRONT ENTRANCE.

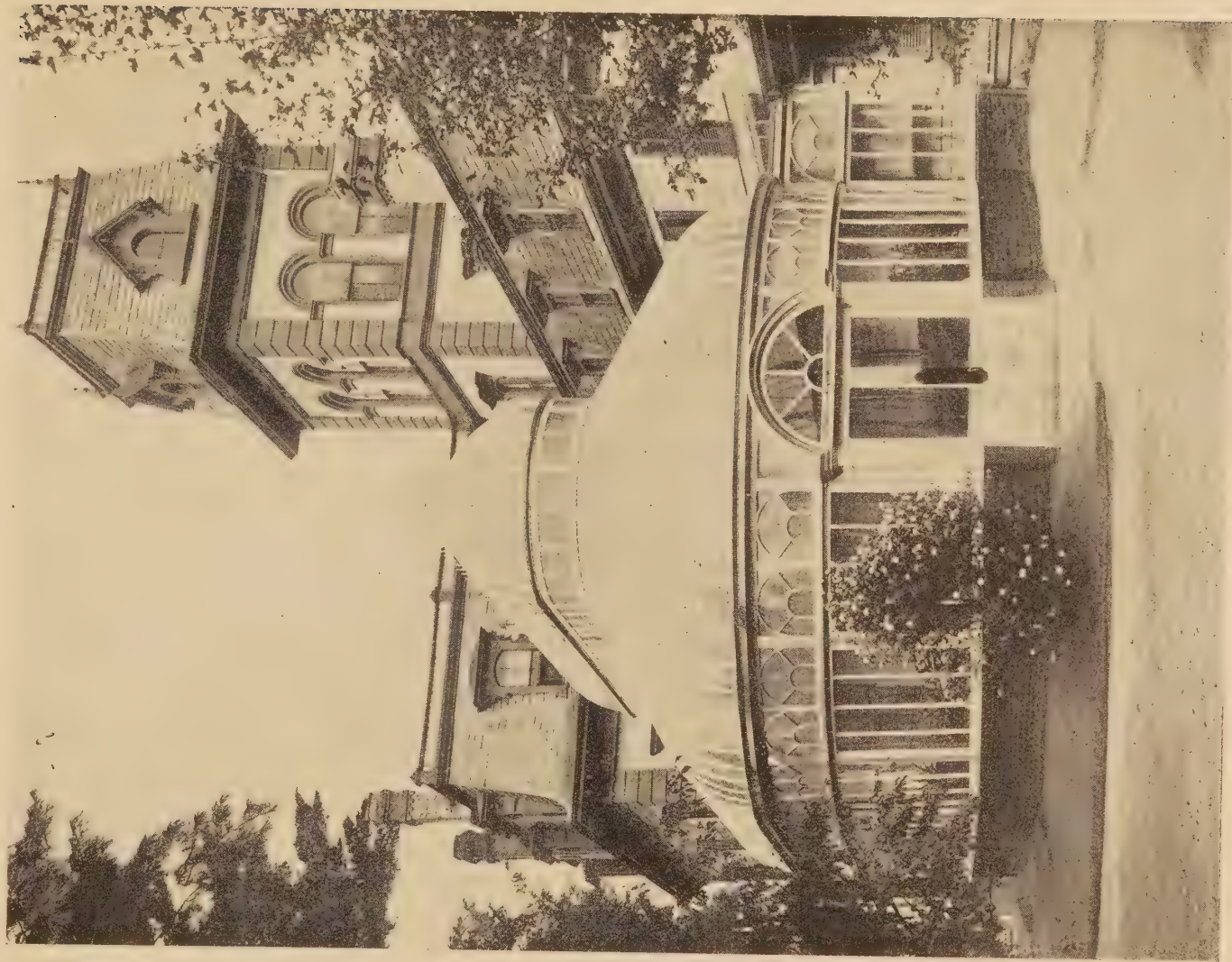


Designed and erected by us at Rockwood Hill in Tarrytown, N. Y.

END ELEVATION OF CIRCULAR-END, CURVILINEAR CONSERVATORY.

233 MERCER STREET, NEW YORK.

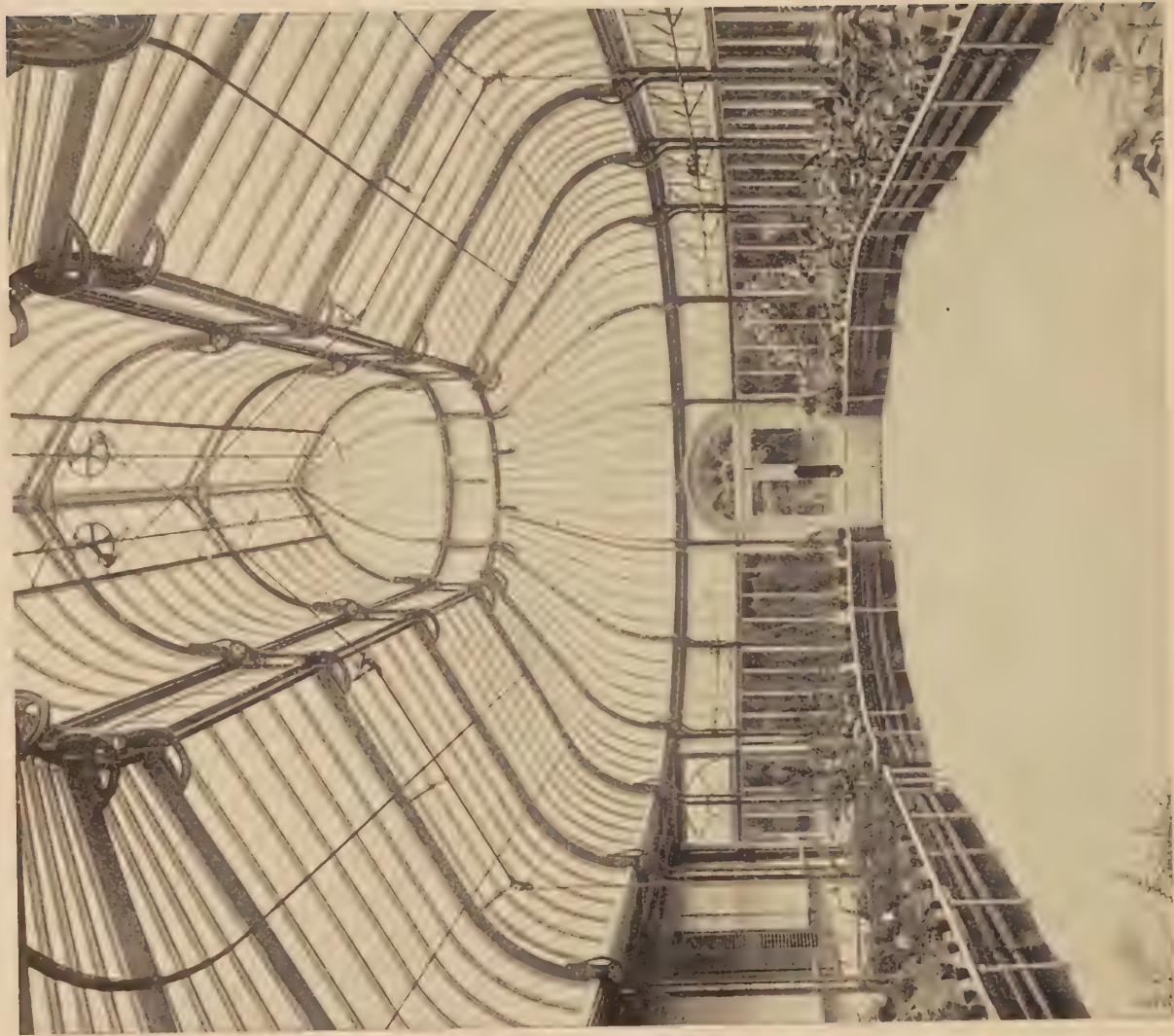
55



Designed and erected by us in Northampton, Mass.

INTERIOR OF CIRCULAR-END CURVILINEAR
CONSERVATORY.

HITCHINGS & CO.,



Designed by us in Northampton, Mass.

INTERIOR OF CURVILINEAR PALM HOUSE.
(WITH LANTERN ROOF.)

233 MERCER STREET, NEW YORK.

57



Iron and Slate Benches, Iron Grating Walks and Cement Floor.
Designed and erected by us at Watkins, N. Y.

INTERIOR OF CURVILINEAR CONSERVATORY.
(WITH CIRCULAR END).

HITCHINGS & CO.,



Iron and Slate Benches and Mosaic Floor.

Designed and erected by us in Brooklyn, N. Y.

INTERIOR PALM HOUSE.



Designed and erected by us in Millbrook, N. Y.

AMATEUR ROSE HOUSE.



Designed and erected by us in Brooklyn, N. Y.

SMALL GREENHOUSE ATTACHED TO STABLE.



Designed and erected by us in Orange, N. J.

This GREENHOUSE is heated by our Hot-Water System, which also heats, in connection with the same, the Carriage and Harness Rooms and Coachman's Apartments.

AMATEUR PORTABLE GREENHOUSE. IRON FRAME CONSTRUCTION.



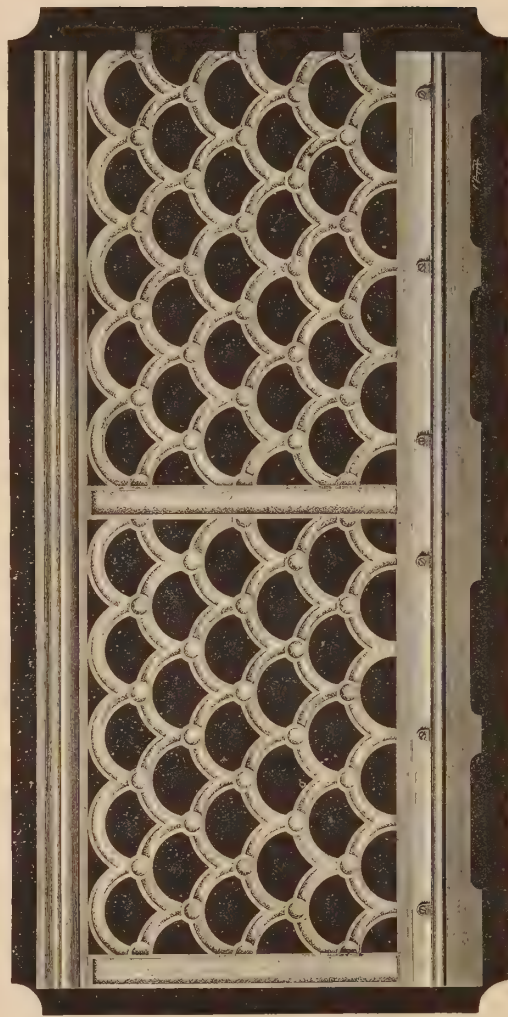
PORTABLE GREENHOUSE, 17 FEET BY 9 FEET 6 INCHES.



PORTABLE GREENHOUSE WITH ONE SIDE AND PART OF ROOF AND PARTITION REMOVED
TO SHOW THE ARRANGEMENT OF THE HEATING AND VENTILATING APPARATUS.
Description given on next page.

THE AMATEUR PORTABLE GREENHOUSE, illustrated on the preceding page, is 17 feet long and 9 feet 6 inches wide. It is so constructed that it can be easily extended in length, when desired, by removing the Front End and inserting another section 8 feet 4½ inches long; the End is then put back in place by means of screws and bolts. The extensions to the Heating and Ventilating Apparatus, Benches and Slat Walk are also easily made. The Posts, Rafters, Purlins and Brackets are of Iron. The Sides, Ends, and Roof are made up in Sections, as are also the Benches, Slat Walk, and Partition which separates the Heating Room from Plant Room. The woodwork is painted two coats of Atlantic White Lead. The Glass is double thick, 16 x 24 inches. The Roof Sash is operated by our Patent Ventilating Apparatus. The Heating Apparatus consists of one of our No. 21 Base-Burning Heaters and a small square Cast-Iron Expansion Tank, which are located in the Room (4 feet x 9 feet 6 inches), which is partitioned off for that purpose. The small 1¼ Pipes which lead to and from the Heater are cut to measure and ready to be screwed together. The Heating Pipes are of our standard pattern—9 feet long and 4 inches external diameter. These are also cut to proper length.

The total cost of the House described above is \$³⁵⁰~~350~~, f. o. b. in New York.



In Palm Houses and Conservatories it is often desirable to screen from sight the Heating Pipes and other apparatus which may be under the benches or tables ; for this purpose we recommend a CAST IRON GRILL, two patterns of which are shown by the above cuts ; while being effective screens, they add materially to the finished appearance of the structure, and yet are of a sufficiently open pattern to admit of a free circulation of the warmth radiated by the Heating Pipes.

The following are the names of some of our later patrons for whom we have done Structural Work, and to whom we cheerfully refer prospective customers; for references relative to Heating Work only, see last pages of Heating Catalogue.

CONNECTICUT.

J. E. BEACH,	Bridgeport, Conn.
JAMES HORAN,	Bridgeport, Conn.
R. SCOVILLE,	Chapinville, Conn.
A. N. PIERSON,	Cromwell, Conn.
O. G. JENNINGS,	Fairfield, Conn.
MRS. M. L. MUNSELL,	Hartford, Conn.
D. A. SPEAR,	Hartford, Conn.
Miss E. M. CASE,	Hartford, Conn.
JOHN COOMBS,	Hartford, Conn.
A. WHITING,	Hartford, Conn.
J. DOWNEY,	New Canaan, Conn.
J. E. HUBINGER,	New Haven, Conn.
F. H. BENTON,	New Haven, Conn.
JAMES BRUCE,	New Haven, Conn.
JOHN D. CRIMMINS,	Noroton, Conn.
COL. H. H. OSGOOD,	Norwich, Conn.
DR. F. S. SELLEW,	Portland, Conn.
A. G. APGAR,	Ridgefield, Conn.
GEO. H. TREANDLY,	Rowayton, Conn.
E. J. TAYLOR,	Southport, Conn.
WM. SLACK,	Stamford, Conn.
C. P. NOYES,	Trumbull, Conn.

COLORADO.

COLORADO FUEL & IRON CO.'S HOSPITAL,	Pueblo, Colo.
C. W. COOPER (Architect),	Pueblo, Colo.
J. A. THATCHER,	Pueblo, Colo.
M. D. THATCHER,	Pueblo, Colo.
D. C. DODGE,	Denver, Colo.

DISTRICT OF COLUMBIA.

C. G. HUBBARD,	Washington, D. C.
U. S. BOTANIC GARDEN,	Washington, D. C.
U. S. NAVY DEPARTMENT,	Washington, D. C.
U. S. EXECUTIVE MANSION CONSERVATORY,	Washington, D. C.

DELAWARE.

WM. DUPONT,	Wilmington, Del.
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FLORIDA.

JAMES LAUGHLIN, JR.,	Zellwood, Fla.
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ILLINOIS.

S. S. BEEMAN,	Chicago, Ill.
C. H. MORSE,	Chicago, Ill.
C. E. RICKCORDS,	107 Dearborn St., Chicago, Ill.
GEO. M. PULLMAN,	Chicago, Ill.

MASSACHUSETTS.

W. H. WOOD,	Andover, Mass.
DR. C. G. WELD,	Brookline, Mass.
E. J. MITTON,	Brookline, Mass.
MRS. JOHN MAGEE,	Beverly, Mass.
MT. HOPE CEMETERY CO.,	Boston, Mass.
R. & J. FARQUHAR & CO.,	Boston, Mass.
H. DUMARESQ,	Chestnut Hill, Mass.
E. & G. WOODMAN,	Danvers, Mass.
P. B. BRADLEY,	Hingham, Mass.
PARK COMMISSIONERS,	Haverhill, Mass.
C. M. BAKER,	Longwood, Mass.
E. H. R. LYMAN,	Northampton, Mass.

MASSACHUSETTS—*Continued.*

A. C. HOUGHTON,	North Adams, Mass.
JOHN W. CHURCHILL,	Plymouth, Mass.
MT. HOLYOKE COLLEGE,	South Hadley, Mass.
E. V. R. THAYER,	South Lancaster, Mass.
BAYARD THAYER,	South Lancaster, Mass.
J. M. SMITH,	Springfield, Mass.
DENHOLM, McKAY & CO.,	Worcester, Mass.
A. F. WHITIN,	Whitinsville, Mass.
HENRY S. WALKER,	Waltham, Mass.
G. W. KNOWLTON,	West Upton, Mass.
H. S. HUNNEWELL,	Wellesley, Mass.

NEW JERSEY.

F. P. OLCOTT,	Bernardsville, N. J.
JULIUS ROEHRS,	Carlton Hill, N. J.
GEORGE YOUNG,	Clifton, N. J.
F. L. MOORE,	Chatham, N. J.
DR. EMLEN PHYSICK,	Cape May, N. J.
COL. D. S. BROWN,	East Long Branch, N. J.
G. E. DIMOCK,	Elizabeth, N. J.
THOS. K. PEMBROKE,	Elizabeth, N. J.
G. B. SCHLEY,	Far Hills, N. J.
SISTERS OF POOR, ST. FRANCIS,	Hoboken, N. J.
CEMETERY OF HOLY NAME,	Jersey City, N. J.
GROSCH BROTHERS,	Jersey City, N. J.
GEO. KRUSE,	Jersey City, N. J.
L. D. ROBERTS,	Keyport, N. J.
WALTER LUTGEN,	Linden, N. J.
GEO. M. MILLER,	Morristown, N. J.
G. E. KISSEL,	Morristown, N. J.
DR. FRED. H. HUMPHREYS,	Morristown, N. J.
W. S. HERRIMAN,	Morristown, N. J.
A. R. WHITNEY,	Morristown, N. J.
WALTER REID,	Madison, N. J.
JAMES HART,	Madison, N. J.

J. P. DICKINSON,	Morgansville, N. J.
H. W. MERRIAM,	Newton, N. J.
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CARL F. REHMAN (Architect),	Newark, N. J.
W. KRAFT,	Newark, N. J.
GEO. BROWN,	Newark, N. J.
COMMISSIONERS EAST SIDE PARK,	Paterson, N. J.
JOSEPH TOWELL,	Paterson, N. J.
W. F. HAVEMEYER,	Red Bank, N. J.
H. L. TERRELL,	Seabright, N. J.
G. AMSINK,	Summit, N. J.
A. MACK,	Somerville, N. J.
MRS. EUGENE KELLY,	South Orange, N. J.
MRS. HARVEY FISKE,	Wilburtha, N. J.
ERNST G. ASMUS,	West Hoboken, N. J.
MRS. C. GARREAU,	West Hoboken, N. J.
H. C. STEINHOFF,	West Hoboken, N. J.

MISSOURI.

W. A. CHALFANTE,	Springfield, Mo.
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MARYLAND.

JESSE TYSON,	Cylburn, Md.
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OHIO.

W. A. PROCTOR,	Glendale, O.
A. J. MOXHAM,	Lorain, O.

NEW YORK.

L. MENAND,	Albany, N. Y.
HOUSE OF GOOD SHEPHERD,	Albany, N. Y.
MRS. DEAN SAGE,	Albany, N. Y.
COMMISSIONERS WASHINGTON PARK,	Albany, N. Y.
CHAS. H. DITSON,	Babylon, L. I., N. Y.
C. L. TAPPIN,	Babylon, L. I., N. Y.
WARREN DELANO, JR.,	Barrytown, N. Y.
J. E. BROWN,	Bellport, N. Y.

NEW YORK—*Continued.*

PARK COMMISSIONERS, Buffalo, N. Y.
 PALMER & SON, Buffalo, N. Y.
 HARRY HAMLIN, Buffalo, N. Y.
 W. W. LAW, Briarcliff, N. Y.
 CAPTAIN D. S. METCALF, Cold Spring, N. Y.
 ANTON SCHULTHEIS, College Point, N. Y.
 MRS. HENRY BURDEN, Cazenovia, N. Y.
 MRS. F. L. NORTON, Cazenovia, N. Y.
 ALFRED DOLGE, Dolgeville, N. Y.
 M. L. HINMAN, Dunkirk, N. Y.
 WINTHROP SARGENT, Fishkill-on-Hudson, N. Y.
 DAILEDDOUZE BROS., Flatbush, L. I., N. Y.
 J. H. STARIN, Fultonville, N. Y.
 W. C. OSBORN, Garrisons, N. Y.
 CHARLES A. DANA, Glen Cove, L. I., N. Y.
 H. F. NOYES, Glen Cove, L. I., N. Y.
 L. A. FISH, Greenport, N. Y.
 COMMANDING OFFICER, Governor's Island, N. Y.
 AUG. BELMONT, Hempstead, N. Y.
 J. PIERPONT MORGAN, Highland Falls, N. Y.
 CAPT. D. S. DENNISON, Lake George, N. Y.
 C. F. DIETRICH, Millbrook, N. Y.
 SAMUEL THORNE, Millbrook, N. Y.
 J. W. MASURY, Moriches, N. Y.
 NICHOLAS MULLER, New Brighton, N. Y.
 F. SCHMIDT, New Brighton, N. Y.
 AUGUST STUMPP, New Brighton, N. Y.
 WARREN DELANO, Newburgh, N. Y.
 ADRIAN ISELIN, New Rochelle, N. Y.
 WM. MILLS, New Rochelle, N. Y.
 DR. H. D. NOYES, New Rochelle, N. Y.
 Miss FLINT, New York, N. Y.
 MANHATTAN STATE HOSPITAL, Wards Island, New York, N. Y.
 F. E. LUTHY, New York, N. Y.
 MRS. F. C. HOMANS, New York, N. Y.

THEO. ROEHRs, New York, N. Y.
 HARVEY MURDOCK, New York, N. Y.
 J. S. PARKS, Patchogue, N. Y.
 MRS. C. H. MALLORY, Port Chester, N. Y.
 H. B. WHEELER, Pawling, N. Y.
 F. R. NEWBOLD, Poughkeepsie, N. Y.
 J. A. ROOSEVELT, Poughkeepsie, N. Y.
 WM. M. McFARLAND, Port Richmond, N. Y.
 GEORGE EASTMAN, Rochester, N. Y.
 MT. HOPE CEMETERY, Rochester, N. Y.
 HENRY F. COOK, Sag Harbor, N. Y.
 J. J. FAYE, Sands Point, N. Y.
 C. B. ALEXANDER, Tuxedo Park, N. Y.
 GEO. REDMONT, Tivoli, N. Y.
 E. T. BUTLER, Tottenville, N. Y.
 G. T. SAMBROOK & SON, Troy, N. Y.
 NEW YORK CATHOLIC PROTECTOR, Van Nest, N. Y.
 JOS. BALACH, Woodlawn, N. Y.
 GEN. G. J. MAGEE, Watkins, N. Y.
 FRANK W. HOYT, Watkins, N. Y.
 THEO. F. JACKSON, West Hempstead, N. Y.
 MRS. J. A. MORRIS, Westchester, N. Y.
 W. C. GOODRICH, West Troy, N. Y.
 L. DUPUY, Whitestone, N. Y.
 V. S. DORVAL, Woodside, N. Y.
 MRS. C. H. LLILLIENTHAL, Yonkers, N. Y.
 MRS. J. B. DICKSON, Yonkers, N. Y.

NEW HAMPSHIRE.

MRS. CATHARINE PARIS, Charlestown, N. H.

NORTH CAROLINA.

J. VAN LINDLEY, Pomona, N. C.
 GEO. W. VANDERBILT, Biltmore, N. C.
 NORTH CAROLINA BOARD OF AGRICULTURE, Raleigh, N. C.
 B. J. FISHER, Ashboro, N. C.

NEBRASKA.

GEORGE A. JOSLYN, Omaha, Neb.

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 JESSE ROBBINS, Carlisle, Pa.
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 J. R. BENNETT, Danville, Pa.
 HOWARD RINEK, Easton, Pa.
 J. R. MAURY, Germantown, Pa.
 J. D. WINDSOR, Haverford, Pa.
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 JOHN STEVENSON, JR., New Castle, Pa.
 HENRY S. JEANS, Philadelphia, Pa.
 MOSES PAXSON, Radnor, Pa.
 BEAUVEAU BORIE, Rydale, Pa.
 E. A. SCHMIDT, Radnor, Pa.
 E. J. MATTHEWS, Valley Forge, Pa.
 C. H. K. CURTIS, Wyncote, Pa.
 J. C. SIMS, Wyndmoor, Pa.

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 J. M. HODGSON, Newport, R. I.

W. F. BURDEN, Newport, R. I.
 FITZHUGH WHITEHOUSE, Newport, R. I.
 OGDEN GOELET, Newport, R. I.
 MAJOR T. K. GIBBS, Newport, R. I.
 WM. HODGKINSON, Bristol, R. I.
 COLONEL R. H. GODDARD, Providence, R. I.

VIRGINIA.

W. G. DUNNINGTON, Farmville, Va.
 A. H. THIERMAN, Richmond, Va.
 GEO. Q. PAYTON, Rapidan, Va.

VERMONT.

S. L. GRIFFITH, Danby, Vt.
 HON. WM. M. EVARTS, Windsor, Vt.

TEXAS.

W. H. TYNDALL, Galveston, Tex.
 MRS. R. S. WILLIS, Galveston, Tex.

WEST VIRGINIA.

HON. STEPHEN B. ELKINS, Elkins, W. Va.

WISCONSIN.

E. P. SAWYER, Oshkosh, Wis.

ONTARIO, CANADA.

A. W. ALEXANDER, Guelph, Ont.

